

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2112.—Vol. XLVI.

LONDON, SATURDAY, FEBRUARY 12, 1876.

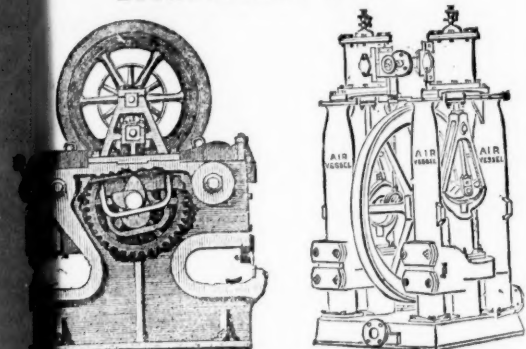
PRICE (WITH THE JOURNAL) SIXPENCE.
PER ANNUM, BY POST, £1 4s.

JOHN CAMERON'S

SPECIALITIES ARE ALL SIZES OF

Steam Pumps, Shipbuilders' Tools,
BAR SHEARS.

ESTABLISHED 1852.



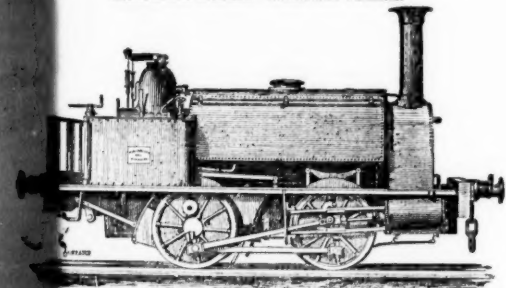
OLDFIELD ROAD IRON WORKS,
SALFORD, MANCHESTER.

HENRY HUGHES AND CO.

FALCON WORKS,

LOUGHBOROUGH.

Honourable Mention—PARIS and VIENNA.



LOCOMOTIVE TANK ENGINES.

For COALMINE, MINERAL, and CONTRACTORS' RAILWAYS, of the best
make and workmanship, always in progress, from 8 to 14 in. cylinders, four
or six wheels coupled, for cash, hire, or deferred payments.

For Excellence
and Practical Success



Represented by
Model exhibited by
this Firm.

HARVEY AND CO.,

ENGINEERS AND GENERAL MERCHANTS,

HAYLE, CORNWALL,

HAYLE FOUNDRY WHARF, NINE ELMS, LONDON,
AND 123, GRESHAM HOUSE, E.C.

MANUFACTURERS OF
PUMPING and other LAND ENGINES and MARINE STEAM ENGINES
the latest kind in use, SUGAR MACHINERY, MILLWORK, MINING
MACHINERY, and MACHINERY IN GENERAL.
SHIPBUILDERS IN WOOD AND IRON.

SECONDHAND MINING MACHINERY FOR SALE.
IN FIRST-RATE CONDITION, AT MODERATE PRICES.

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES
SERIES CAPTAINS; and CRUSHERS of various sizes. BOILERS, PIT
WORKS of all descriptions, and all kinds of MATERIALS required for
MINING PURPOSES.

THE PATENT PNEUMATIC STAMPS
May be SEEN AT WORK at HAYLE FOUNDRY WHARF, NINE ELMS,
by previous application at either of the above addresses.

PATENTEES.



PATENTEES.

SAM'L MARSDEN & SON,

MANCHESTER SCREW-BOLT WORKS

London Road, MANCHESTER.

200 TONS OF BOLTS, NUTS, &c., ALWAYS IN STOCK,

MADE BY PATENT MACHINERY.



Will make 10 bolts per minute. Will make 60 nuts per minute.

Patentees and Makers of Special Machinery for Bolt,
Spike, and Nut Manufacturing.



Over 60 of these Bolt and Spike-making Machines have been sold to Engineers,
Railway Carriage and Wagon Builders, and Screw Bolt Manufacturers.
These Nut-making Machines will produce 65 to 85 nuts per minute, 1/4 to 3/4 in.
diameter of hole, at a cost for labour of 1/4d. to 1d. per gross.
Machines to make up to 1 1/2 in. nuts are in progress of making.
To see the Machines working, apply as above.



PARIS.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH.

THE MCKEAN ROCK DRILL

IS NOW BEING FURNISHED EXCLUSIVELY FOR THE

ST. GOTHARD TUNNEL OF THE ALPS.

SIXTY MCKEAN DRILLS—MCKEAN RAILWAY TUNNEL AUTOMATIC
DRILL—ordered on 29th April, 1875, are now in course of con-
struction for this work.

THE MCKEAN ROCK DRILL is attaining general use through-
out the World for Mining, Tunnelling, Quarrying, and Sub-Marine
Boring. EIGHT DIFFERENT TYPES AND SIZES OF THE
MCKEAN DRILL are now produced, affording a selection of the
most suitable for any special work. The smallest McKean Rock Drill
weighs only 70 lbs. ALL MCKEAN'S ROCK DRILLS ARE GUARAN-
TEED FOR A TERM, WITHOUT EXTRA CHARGE.

The MCKEAN ROCK DRILLS are superior for many reasons—

- They are the most powerful.
- They are the most portable.
- They are the most durable.
- They are the most compact.
- They are of the best mechanical device.
- They contain the fewest parts.
- They have no weak parts.
- They act without shock upon any of the operating parts.
- They work with a lower pressure than any other Rock Drill.
- They may be worked at a higher pressure than any other.
- They may be run with safety to 1500 strokes per minute.
- They do not require a mechanic to work them.
- The same machine may be used for sinking, drifting, or open work.
- They are the smallest, shortest, and lightest of all machines.
- They will give the longest feed without change of tool.
- They work with long or short stroke at pleasure of operator.
- The working parts are best protected against grit, and accidents.
- The various methods of mounting are the most efficient.

FOR MOUNTAINOUS DISTRICTS

Without roads and inaccessible to heavy machinery, the McKean
Drills and light special plant are thoroughly adapted.

Owners of Mines in such undeveloped regions have by their use
the means of quickly testing and developing their Mineral Prop-
erties at small expense.

MERCHANTS AND AGENTS

Purchasing the McKean Rock Drills for export can have the fullest
assurance of satisfying their correspondents abroad, and of opening
new and profitable trade.

ENGINEERS AND CONTRACTORS SHOULD NOT OVERLOOK
THE ADVANTAGE TO BE GAINED BY THE APPLICATION
OF THESE MACHINES IN THE EXECUTION OF
CONTRACTS, BASED UPON HAND-LABOUR PRICES.

N.B.—Correspondents should state particulars as to
character of work in hand in writing us for information,
on receipt of which a special definite answer, with
reference to our full illustrated catalogue, will be sent.

250 MACHINES IN USE AND SOLD.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL,
IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

MCKEAN AND CO.,

ENGINEERS.

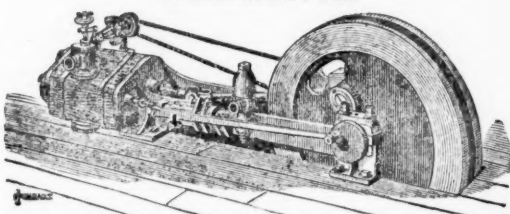
OFFICES.

31, LOMBARD STREET, LONDON, E.C.; and
5, RUE SCRIBE, PARIS.

MANUFACTURED FOR MCKEAN AND CO. BY

MESSRS. P. AND W. MACLELLAN, "CLUTHA IRONWORKS,"
GLASGOW.

Economical Steam Power Guaranteed.



THE

GENERAL ENGINE & BOILER CO.,

8, UNION COURT, OLD BROAD STREET,
LONDON.

Patent "Express" Engines, especially suited for powers
of from 2 to 20-h.p.

Patent Horizontal Expansive Engines, with automatic
variable expansion gear. Will work as economically as most con-
densing engines.

Patent Horizontal Condensing Engines, the economical
working of which is guaranteed.

Compound Condensing Engines, for Mills, Pumping,
Blowing, &c.

Patent Feed Heaters, guaranteed to heat the feed water up
to over 200° Fah., and save about 15 per cent. of fuel.

Patent High-pressure Boilers, safe, simple, economical,
and accessible.

Cornish, Multitubular, and other Boilers.

CATALOGUES & ESTIMATES ON APPLICATION.

BARROWS

AND

STEWART,

Engineers,

BANBURY,

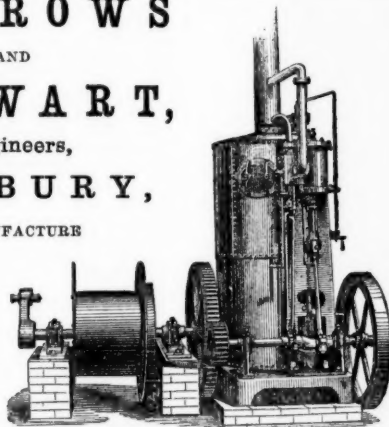
MANUFACTURE

Semi-

Portable

AND

Vertical



STEAM ENGINES, FOR PIT SINKING

WINDING COAL, PUMPING, &c.

Also COMBINED MILLS and ENGINES for Grinding Slag, Sand,
Mortar, &c.

Specifications and prices on applicat

WARSOP AND HILL,

HYDRAULIC AND GENERAL ENGINEERS.

SPECIALITIES.

PATENT PORTABLE POWER ROCK DRILLS;—

IMPROVED

AIR COMPRESSORS & STEAM ENGINES.

MINERS' PICKS, with interchangeable Steel Points.

Semi-portable and fixed Winding, Hauling, and Pumping Engines

HYDRAULIC WINDING ENGINES.

MINING MACHINERY; PLANTS COMPLETE.

Full particulars, with prices and photographs, on application.

DEERING STREET, NOTTINGHAM

PENNANCE

FIRE-CLAY AND BRICK COMPANY

NEAR REDRUTH, CORNWALL,

Are now selling Fire Goods of superior quality, manufactured
from clay which has been subjected to the strongest tests, and
proved to resist a greater amount of heat than any yet offered
in the market.

Samples and prices on application at the Works; or of

Beer, Musgrave, & Co., Merchants

FALMOUTH.



SELECTED BY THE ADMIRALTY FOR THEIR WORKS.
T. A. WARRINGTON,
 CO-PATENTEE OF "THE POWER-JUMPER," SOLE AND EXCLUSIVE AGENT FOR

THE "KAINOTOMON" ROCK DRILL,

THE CHEAPEST AND BEST MACHINE FOR SINKING, MINING, AND QUARRYING.

"THE ECONOMIC" COAL CUTTER,

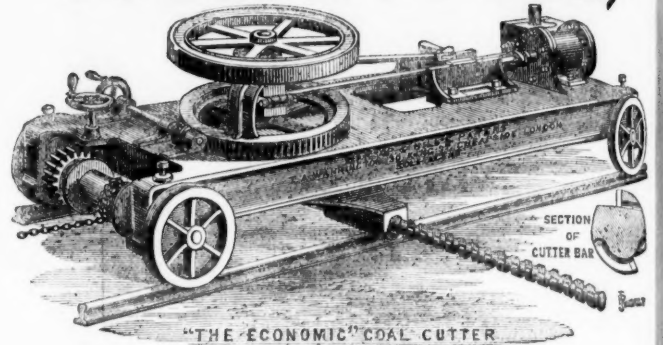
FOR SIMPLICITY, ECONOMY, AND EFFICIENCY UNEQUALLED.
 AND SUPERIOR

AIR COMPRESSORS;

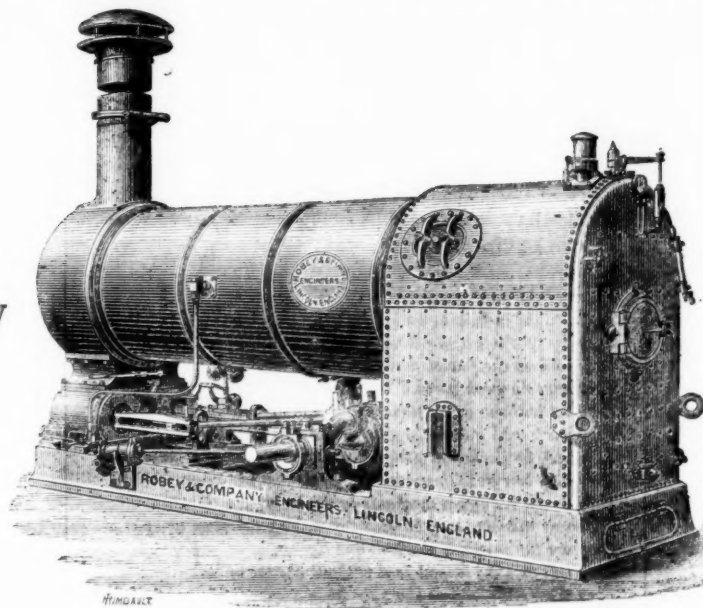
ENGINEER AND CONTRACTOR FOR

Mining Machinery of every description.

30, KING STREET, CHEAPSIDE,
 LONDON, E.C.



ROBEY AND COMPANY'S NEW DESIGN OF HORIZONTAL FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED.



The Cost of all expensive
 Brick Buildings and Chimney
 is saved by this Engine.

The Boiler is specially
 arranged to burn saw-dust
 and refuse wood,
 and every description of
 inferior fuel, and thus
 economise Coal.

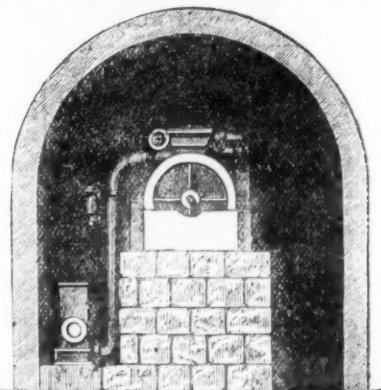
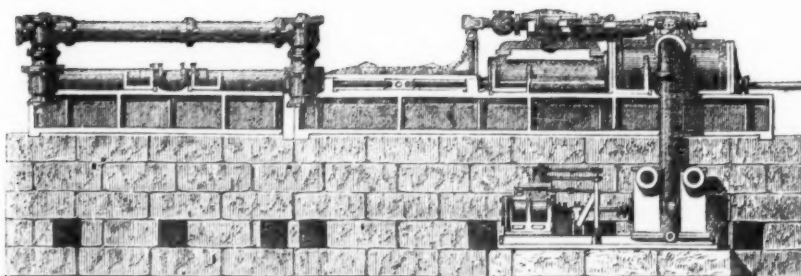
For full particulars and prices, apply to—

ROBEY AND COMPANY, ENGINEERS, LINCOLN, ENGLAND.
 LONDON OFFICES.—98, CANNON STREET.

HATHORN, DAVIS, CAMPBELL, AND DAVEY,

MAKERS OF

The Differential Pumping Engine, Hydraulic Pumping Engines, Cornish Engines, Differential
 Blowing Engines, Compound Rotative Engines, the Separate Condenser, Hydraulic Machinery,
 Mining Plant of all kinds, and Machinery for Water Supply, Irrigation, &c.



THE COMPOUND DIFFERENTIAL ENGINE AND FORCE PUMPS,

With Separate Condenser, as applied Underground, forcing 700 gallons per minute 920 feet high.

SUN FOUNDRY, LEEDS.

FURTHER PARTICULARS ON APPLICATION

SIR,—A
 than with
 with a few
 by Mr. Tay
 Jan. 29.
 tem seem
 coals can
 he means
 altogether
 husk round
 in coal mi
 Mr. Tay
 2 lbs. per
 produce 2
 When his
 motion is
 air throug
 end than
 be great.
 greater de
 move to a
 The adv
 sealing it
 Colwell—
 but even
 16 lbs., I
 would be
 it would
 thing gain
 It has o
 safe by th
 upcast; h
 a furnace
 mine divi
 communic
 the down
 either of
 downcast
 each of th
 tively. A
 the air-co
 (say) 16 l
 the door i
 there is fr
 upcast sh
 out. The
 that was
 forth, and
 During
 with both
 and the p
 obscure c
 work am
 nicates w
 are draw
 matter of
 late durin
 Mr. Colwe

SIR,—I
 ore, and t
 That gen
 Iron and
 metallic i
 of the No
 works."
 shares in
 bouring l
 netic oxi
 in Swede
 Pulkarsbe
 the Stribe
 should ha
 nately the
 last quot
 Mr. Forbe
 and requi

SIR,—I
 ject. You
 about the
 Emma loc
 who have
 ginal boar
 tunnel, fo
 They refu
 trance to
 under the
 the hill b
 dipping f
 eluded the
 fore it co
 hard line
 the shaft
 that 100 f
 point, wa
 in every v
 holders h
 Bay City
 longed to
 and they
 Never v
 and folly.
 holder do
 fort for th
 appointed
 mits that
 and that
 been stron
 consoled
 at once be
 character,
 nothing;
 — There y
 The origi
 were exp
 work, wh
 ing which
 gation wh
 mine in th
 robbing it
 able to ex
 ing to ado
 If there
 be taken
 bonanza c
 stantly ta
 statement
 Marshal,
 stances, a
 injunction
 taking ou
 States Ma

Original Correspondence.

THE VENTILATION OF COAL MINES.

SIR,—As your space cannot be better occupied at the present time than with a discussion of the above subject, I venture to trouble you with a few remarks which occur to me. They have been suggested by Mr. Taylor's paper, and Mr. Colwell's letter in the Journal of Jan. 29. Mr. Taylor's "positive" ventilation and Mr. Colwell's system seem to be much alike, only the latter gives a plan whereby the coals can be got out, whereas Mr. Taylor leaves us in doubt whether he means to ventilate certain tubes within the mine, or seal it up altogether. I feel assured that the present agitation is the crude husk round a germ which will yet develop into an improvement in coal mine ventilation.

Mr. Taylor is quite in error when he supposes that a pressure of 2 lbs. per square inch on pistons pumping air down a shaft will produce 2 lbs. of pressure of air being emitted at a distant shaft. When his apparatus works properly it will show him that air in motion is resisted by friction. The work required to force so much air through a mine is probably a little more if pumped in at one end than if it be drawn out at the other; but the difference cannot be great. This small difference I would anticipate to arise from the greater density of the compressed air, and from its being likely to move to a greater extent through the more indirect courses.

The advantage derived from forcing the air into the mine, and sealing it up from the external atmosphere, is that stated by Mr. Colwell—the elimination of the fluctuations of barometric pressure; but even if the pressure of the air within the mine were kept at 16 lbs., I fear that in time the tension of the gas within the coal would become so great that it would escape much as before, only it would ooze out with greater regularity, which would be something gained, though not sufficient I fear to ensure safety.

It has occurred to me that any coal mine might be kept perfectly safe by the following means. Have two shafts, a downcast and an upcast; have a means of forcing air down the downcast, and have a furnace or other exhaustive contrivance at the upcast; have the mine divided into two perfectly distinct air-courses, each of which communicates with both shafts; have an arrangement at the foot of the downcast shaft, whereby the compressed air may be led into either of these courses, and have doors preventing its return to the downcast shaft; have similar doors between the upcast shaft and each of these courses. Let us call these air-courses A and B respectively. At the beginning of a shift the men enter A, and get to work; the air-compressor forces air into A, and keeps the pressure up to (say) 16 lbs. As the hatches are filled they are accumulated behind the door in the neighbourhood of the downcast shaft; meanwhile, there is free communication between the downcast shaft, B, and the upcast shaft. The exhaustor is doing its work, and B is being swept out. The pressure in B, being only that of the atmosphere, any gas that was during the previous shift near being disengaged now bursts forth, and is drawn away.

During the next shift the men enter B, and its communication with both shafts is cut off. The compressor now forces air into B, and the pressure soon rises. Any gas that may have been left in obscure corners is driven back to its native crevices, and the men work among fresh air, and in safety. During this shift A communicates with both shafts, gas is given off and is cleared out, the coals are drawn from it, and so the cycle is completed. It would be a matter of convenience whether the coals were allowed to accumulate during a shift, or were taken out by "locks," as proposed by Mr. Colwell.—*Alston Moor, Feb. 7.* DAVID BURNS.

SWEDISH IRON ORE.

SIR,—I note the article in last week's Journal on Swedish iron ore, and the quotations from Mr. David Forbes's remarks thereon. That gentleman reported on the mines held by the Central Swedish Iron and Steel Company. "These ores average about 50 per cent. of metallic iron," and the Mückeln-Vekern Railroad "brings the mines of the Nora district into direct communication with these iron-works." The company hold, according to Mr. Forbes's report, 575 shares in the celebrated Persberg Mines, and one-eighth of the neighbouring Dunderback Mines. The iron from these mines are magnetic oxides, and in quality are regarded as amongst the very finest in Sweden. In the Nora district the estate holds—73 shares in the Pulkarsberg Mine, 65 shares in the Vikers Mine, and 15 shares in the Striebers Mine. According to Mr. Forbes's report, this company should have paid a dividend of about 30 per cent. per annum. Unfortunately they have never paid the shareholders a farthing, and from the last quotation I saw the 10% shares could be had for 20s. To quote Mr. Forbes's report once more, "These figures speak for themselves, and require no further comments from me." AN ENGINEER.

EMMA MINE.

SIR,—I have read with interest your remarks on the above subject. You say that the directors "who have been replaced" knew about the prospects of the Bay City Tunnel Company striking the Emma lode. That remark is quite true, not about the directors who have lately been replaced by Mr. McDougall, but about the original board, who, I am informed, certainly did know all about the tunnel, for it was offered to them for a consideration two years ago. They refused to buy it for reasons pretty easily explained. The entrance to the tunnel was some 270 ft. down the hill side, and right under the Emma tunnel. The Emma tunnel was some 250 ft. into the hill before it reached the vein, and the vein as it went down was dipping further into the hill. At the same rate of dip it was concluded that the Bay City Tunnel would have to be 1500 ft. long before it could cut the vein. The cost of driving such a tunnel through hard limestone would necessarily be great and the time long, whereas the shaft inside the Emma Mine was already down some 170 ft., so that 100 ft. of sinking, versus 1500 ft. of driving to reach the same point, was the sole question to decide. The board at that time were in every way pressing on the sinking of the shaft, and if the shareholders had had a very little patience the rich discovery which the Bay City Tunnel Company seems to have made would have belonged to the Emma Company without the possibility of question, and they would have reached it more than a year ago.

Never were shareholders more justly punished for their insanity and folly. A more unreasoning animal than a disappointed shareholder does not exist. In the late war the French took great comfort for their defeat in saying they were "betrayed." So the disappointed shareholder has always been "swindled." He never admits that greed for high dividends led him into a risky speculation, and that his judgment was at fault when the risk proved to have been stronger than the prospect. His loss seems in some measure consoled by fancying he has been "swindled." So the board must at once be thrown over; "they are all rogues." High position, high character, lifelong integrity, which had conferred these, all go for nothing; over they must go to give place to others. * * *

There you have the last two years' history of the Emma Mine. The original board, which worked without fees, and economically, were expelled, and men were put in who knew nothing of their work, who voted themselves high salaries, who abandoned the sinking which would have led to a fortune, and took up expensive litigation which could end in nothing but ruin, and now we have the mine in the hands of the United States Marshal, a rival company robbing it of its richest ore, an empty treasury, and a board neither able to extricate the company from any of its difficulties, nor willing to adopt the only steps that give the slightest gleam of hope.

If there is any delay about taking these steps they need hardly be taken at all, for the Bay City Tunnel Company will have the bonanza cleared before it can be prevented, but if steps were instantly taken they might still be in time. The Chairman's recent statement that "the mine is safe in the hands of the United States Marshal, and he is content to leave it there," is, under the circumstances, supreme folly. Instant steps should be taken to get an injunction against the Bay City Tunnel Company, to prevent their taking out any ore, and to put that tunnel in the hands of the United States Marshal till the right to the ore is determined. Negotia-

tions should be entered in with Mr. Park to resume the working of the mine, have the Attwood winze pumped out, and search for the vein threads that are sure to exist somewhere and lead into the bonanza below, and which is said to be only 40 ft. under.

This is undoubtedly the one last chance for the Emma shareholders; if it be neglected then we may bid farewell to any hope of recovering one shilling of our money.

A DISAPPOINTED, BUT NOT INSANE, SHAREHOLDER.

THE EMMA MINE.

SIR,—Mr. McDougall certainly deserves credit for straightforward conduct in admitting into his paper an article from "Its Own Correspondent" at San Francisco which, in the accompanying extract, goes far to excuse the promoters of the Emma Mine from having concocted a deliberate swindle:—

"Writing of gold reminds me that the Consolidated Virginia Mine has brought the amount of ore hoisted up to the same amount as before the great fire at Virginia City on Oct. 26—850 tons daily. The product, per month, of this amount of ore is about 350,000 sterling. The pluck that has been shown by Messrs. Flood, O'Brien, Mackey, Fair, and Judge Heyderfeldt, and those associated with them, in continuing to sink this mine until they struck the 'great bonanza,' in 1874, still carries this mine through. Enormous amounts of capital were for years buried, but still the work was pushed on, and now the owners are reaping their reward, and it is a rich one indeed. It is useful to compare the way in which this mine has been dealt with with the mode in which the Emma was treated by the British company. The Emma when purchased was not a mine—it was simply a good prospect. When will your people learn the difference? Three years since the Consolidated Virginia presented no better prospect than the Emma, and if the former had been sold to an English company I believe it would now have been said to have been a 'swindle,' and the work on it would have been stopped long since. The Consolidated Virginia has paid back the capital invested over and over again, because it is now a mine, not a prospect.

The Emma is still only a prospect, though, as we believe here, the prospect is first-class—not so good as to warrant the price which was given for it three years ago, but still such a prospect that, if it were in Californian hands, would attract all the capital required to search it thoroughly for ore. Your investors should recollect that a mine can only be said to exist when it is really thoroughly investigated, and that until then it is only a speculation of the wildest kind. This is so, even with the best. But pluck and perseverance will often, under most disadvantageous circumstances, make a splendid property. Witness the Richmond Consolidated. It should be fully understood that any man who embarks in mining enterprise, even assuming all to be perfectly honest and above board, must be prepared to pay an indefinite amount in calls, or sell out, and that it is folly to expect an adequate return without sinking an immense amount of money. There are circumstances in connection with the Emma which, of course, handicapped it heavily from the start, and which you in England are far more competent to deal with than we are here. But if that mine (or rather prospect) had been put upon this market in precisely the same way, and for the same price at which it was sold to the English public, it would be now fully developed for good or for evil; either paying enormously or abandoned."

The present question for the shareholders of the Emma to consider appears to be whether there is sufficient evidence before them to justify the belief that the Emma is a continuous lode or bed vein. From private information I have little doubt that a body of high-grade ore has been struck by the tunnel under the Emma, but the shareholders will not be able to establish any right to this unless they can trace a continuous vein down from the upper workings. The connection between one chamber of ore and another may be small, but it is sure to exist if the formation of the ore body is due to its eruption from below—a point which good geologists and mineralogists ought to be able to determine. The Emma was first discovered by means of a very small vein, abandoned more than once as worthless, till the third persevering adventurer traced it into the grand chamber, which yielded for some time such great results. The tunnel discovery may prove of no value to the Emma shareholders, but it is certainly an additional incentive to testing the mine again before abandoning it.

AN ORIGINAL SHAREHOLDER.

LONDON AND CALIFORNIA MINING COMPANY.

SIR,—Can your readers give me some information as to what this concern is doing? I think it is about time that some change should be made in the directorate. I believe the directors individually to be thoroughly honest and well-meaning, but I think as a body they have proved themselves painfully incapable of manipulating the affairs of the company, in addition to which the introduction of some new blood into a concern invariably has a beneficial effect.

London, Feb. 8

A LARGE ORIGINAL SHAREHOLDER.

PARYS MOUNTAIN MINE.

SIR,—I should be much obliged to any one of your readers who is acquainted with the facts if he will inform me on the following points:—

- 1.—Was this mine when the old workers were stopped by water as rich at the point where the stoppage took place as it had been in the upper levels?
- 2.—How is it proposed to overcome the water in the present workings?
- 3.—Is a level being driven from the new shaft towards the lode or vein, and, if so, how far further is it probable that the level will have to be driven before the lode is reached, and how long will it probably take to reach the lode?
- 4.—What is the amount of the fund in hand applicable to, and what is the probable expense of putting the mine into a dividend state? and

Lastly.—Assuming that the lode proves as rich as is expected, how long before dividends will probably be paid. INVESTOR.

VALUABLE DISCOVERY OF LEAD IN YORKSHIRE.

SIR,—A "Well-Wisher to Legitimate Mining" is undoubtedly right in his statements with regard to the discovery, or rather discoveries, at New Appletreewick Mine, a few miles north-west of Skipton. I have seen the workings on several occasions, and can, therefore, say with perfect truth that the discoveries they have made, and which they are now prosecuting with so much vigour, are indeed rich, and simply incalculable. But as to his remarks as to the doings of the parties holding the adjoining ground, and as I have the privilege of being one of the parties alluded to, I have to inform him that it is not their intention "to drive a deep level which will take a lifetime to accomplish," and that we are not "driving into the face of a great hard limestone scar," but, on the contrary, are only taking a drift along the face of the limestone scar, which will intersect the same vein which is shown at the opposite side of the gill, or valley, the vein being fully 7 ft. wide, and carrying a good leader of lead ore, which vein was formerly worked by a company, and raised a great quantity of ore. I have no doubt we shall cut the vein very shortly, as we have now cut into softer ground, and the indications altogether show that we are not far from the vein. When this is accomplished we intend to drive a level on the course of the vein, which in time will give us a cover or backs above the drive of from 60 to 80 fms. In doing this we shall also come in contact with a very fine north and south vein, which will enable us, by driving on its course, to intersect at great depths from surface, and at short intervals, a number of lead-bearing east and west veins. We also know that there are at least three veins which will come into the vein we are now driving for before it reaches the north and south vein. We discontinued the similar work to our neighbours (costening or trenching) more on account of the weather than anything else, and as soon as we have cut the vein we are now driving for our intention is to open up all our east and west veins in the western part of our sett. We have already discovered a north and south vein in this part of the ground, at least 9 ft. wide, with two east and west veins crossing it a little distance from each other, and not far from the boundary between the two companies, and there are, no doubt, more veins further north, which we shall find by trenching, &c.

With regard to "Well-Wisher's" remarks respecting the "characteristic feature in the notions of the mining fraternity that it is impossible to have a good mine without spending thousands of pounds in driving a deep horse level," I fancy there will not be much ore raised in this district (Pateley Bridge) without deep levels, as we can scarcely anticipate getting ore which has been previously raised near to the surface, and oftentimes to a great depth, by the "old men" and previous companies, and I do know that there is scarcely a vein in this part of the country that has not already been worked at the surface, and the ore taken away by the "old

men." I am glad to see from "Well-Wisher's" remarks the success of the New Appletreewick Mining Company is not to be reaped by the "stockbrokers," and that the adventurers in legitimate mining will have the benefit of their own speculation. If this is the case, I have not the least hesitation in saying the New Appletreewick Mining Company and the Appletreewick Gill Heads Mining Company will both alike be most amply rewarded for their outlay.

Pateley Bridge, Leeds, Feb. 9.

WM. NEWBOULD.

SEPARATION OF MINERALS.

SIR,—One would have thought that your correspondents, Messrs. Jewell and Ellery, would have enlightened our minds a little more on this vexed question—for if one be a theorist and the other a practical we should have heard both sides of the question argued out; but Mr. Ellery in his last communication leaves his subject for the purpose of making some depreciative remarks relative to his opponent, and indulges in a latoured eulogy of his own personal capabilities. With regard to the separation of mundic from blende a great deal will depend on the nature of the mixture—whether the minerals be in a coarse or massive state, or whether they be finely disseminated, like the minerals in a fine granite. If in the former state the separation may be effected without much difficulty; but if in the latter it requires very skilful manipulation. I have seen mundic and galena so mixed in this way that the most improved machinery known in this country six years ago failed to make a perfect separation, and the heaps of lead partly dressed have almost the appearance of ochre.

If Mr. Ellery can separate blende from mundic why does he not tell us how or which way he does it? It cannot benefit your readers by making bare statements, which he calls "facts." The selling of scores of tons of mundic from the Cargoll Mines says nothing, for the mundic might never have been associated with the blende, or it might have been associated in such a way as to be separated by hand-picking; and till he can show it was otherwise his "facts" must fall to the ground. He says that all competent dressers will agree with him that for a man to thoroughly understand the cleaning of ore he must have worked on the floors from a boy. If this be the case we shall never be able to bring education to bear upon this department of mining; for if to be a competent dresser a man must have worked on the floors from a very small boy when and where could he get any education? Had he said "all self-sufficient dressers," &c., I, for one, would agree with him, but I cannot accept his unqualified statement. As to the length of time required to get a thorough knowledge of cleaning of ores it will depend on the man's knowledge of natural philosophy, together with a natural keenness of mental vision—so that some men may know more of dressing ores in twelve months than others would in a life-time. What in the name of common sense a man's birth-place can have to do with a knowledge of concentrating ores I fail to see. Why, a man is no better lead-dresser for having been born in a lead mine, any more than a man would be a better miner for having been born underground—indeed, I knew a man who was literally born underground, but he was no better than his compeers. I know not where either Mr. Ellery or Mr. Jewell was born; but I know that the latter has had a great deal of experience in the concentration of ores, and he ought to be able to give us some very able information on the subject if he chose so to do.

I was not aware that any situation could be held as an inheritance, or even looked upon in that light; but it seems that Mr. Ellery would regard some as such, as he speaks of some holding good situations "by heirship." How fading is such an inheritance! In one hour it may be taken away, and if this is the only inheritance he possesses he must fall into the cold arms of charity. Whatever inheritance of this kind was left to Mr. Jewell he has lost, or left it for for many years, for I know he had nothing to recommend him to his present position but a sound education in the principles of mining, with a character for truthfulness, integrity, and untiring energy, which should be considered the only true title-deed to "a good situation and high salary."—*Feb. 3.* MEDIO.

"CIRCULAR" MINING—NORTH LAXEY AND ASSHETON MINES.

SIR,—Because I happen to be a shareholder in North Laxey and Assheton Mines I am continually plagued with a circular issued by an utter stranger to me, hailing from Palmerston Buildings. Curiosity prompted a perusal of the last copy, and its contents, however incompatible with facts, were at least amusing.

Shareholders in North Laxey are "disinterestedly" informed that their mine "has no value." This wholesale denunciation is, of course, unsupported by any appearance of facts, therefore it must be passed by just for what it is worth. But while perusing this serio-comic production, the remembrance flashed across one's mind that the same name, minus the "jun.," pestered us years since with similar prophetic fancies about Great Laxey. At the same time Rhennie Laxey and East Laxey were the mines in which to invest. *Sub silentio.*

With equal self-approbation does this scion acquaint us with the somewhat irreconcilable argument that Assheton will not become a dividend mine, for the reason that Carnarvonshire has not been successful as a mining district. Surely an unaccountable psychological influence has been playing cruel tricks with the cerebration of our young friend, but a "little knowledge is (indeed) a dangerous thing." Can it be possible that some passed-away shareholder in the Westminster or Ebury Mine, with which this "jun." was early connected, has involuntarily controlled the mentality of this aspirant Zadkiel, constraining him to believe in his "own false prophecy?"

If "instinct be stronger than argument" some shareholder in Thornhill Reef may peradventure tell us why these periodical warnings have long ceased to produce any effect other than derision—indeed, do they "pass into thin air." Have we forgotten the "praises that were ever sung" concerning Malpas, Rica, or Malabar? If it be possible we will come "down the ladder of time," and, "interviewing this 'circular' seer," after meeting his Delilah, recall Beechworth Gold. "He who soweth brambles must not go barefoot."

A SHAREHOLDER IN NORTH LAXEY AND ASSHETON MINES.
Feb. 8.

MINING IN CARDIGANSHIRE.

SIR,—The year 1876 has brought in a more healthy appearance in mining than has been seen before for years. We may fairly say that it is upon the move of bringing the whole country full of mining seekers. From the little village of Trefegulles, in Montgomeryshire, down to the sea in Cardiganshire, every foot of ground is taken up and working—some with a will and determination, if possible, to find another Van, or East Van, or North Van, or may be a South Van. I went over the whole of the first three mines yesterday, and it would not be easy to describe the appearance of mines of such magnitude and so rich. The East Van is down 70 fathoms (a cross-cut driven to the lode), and about 2 ft. of it only has been driven through a portion of the lode. The lead has a beautiful flakey appearance, and covered over with a coating of carbon of lime, white lead, and spar of a very delicate texture, specimens of which Capt. Williams keeps in his office at the Van Mine. I should like to see something of the sort to the extent it is there coming through this county. We have in this county several mines on the Van and East Van lode, but none of them equal to the sister county. Although those that are in this district are not carried out with the energy and force they ought to be, seeing that going a little deeper is all that is required to bring them almost, if not fully, as good as the East Van at present. The first mine I think that boasts of the honour of being worked upon this lode in Cardiganshire is the West Esgrail-Lle. The Crown, Llwynteffi (east and west), the Aberystwith Mines, Ystumtean, Tyna-from, Caegynon, Rheidol mines on the south of the river; all these mines are on the lode precisely as the East Van, which has been sunk 70 fms. before even trying for anything. Such, then, is the difference of working. In one place you will find things being pushed on to get a sample of 20 tons, more or less, never thinking of the great injury they are doing to the mine and the public at large, just to get one dividend, and then the poor mine is left to do

its best, or for years neglected, thrown aside as hopeless, and for some time at all events standing in the eyes of the mining market as a warning to those who may feel inclined to go a little into mining, but which mine by-and-by turns up again, and by a little deeper sinking and little further driving and spending the capital in the mine, that once despised little mine could be brought, without doubt to look at the former owners and charge them with their unmining ways of doing things. Such mines are to be found in every country, and the mines that I have mentioned may be classed with the once little despised mine, for none of them are half worked as they ought to be, consequently it will be long before we see a Van again in the Cardiganshire mines. But, go at it with a good and determined spirit, and the result would be, I am confident, immense success. Here we have plenty of water throughout the year (the rivers are sufficient to work all the mines except those that are too high on the mountains), good roads, good miners, and a good supply of good mines. Although I have mines in both counties I would not exchange those in this county for the mines in general throughout the other county, except the two rich ones spoken of above. I long to see some good mines again in this country, as there were years ago; but unless we get some more capital down here we must push on as well as we can, and patiently abide the advent of better times, for I do not know of any part of the globe where mining could be carried on upon a cheaper scale than Cardiganshire.

1, Rheild Cottage, Feb. 9. SAMPSON TREVELLATH, C.M.E.

GOLD IN WALES—No. XVIII.

DOLGELLEY DISTRICT—DOLFRWYNOG SECTION.

Dolfrwynog, or Old Dolfrwynog Mine sett (Llanfachell parish), includes the farms Tynsimna, Bwlchroswen, Rhoswen and Hafod Owen. It is bounded on the east by Doledd and Penbryn farms (part of East Dolfrwynog), on the west by the West Dolfrwynog (or "Turf Copper Mine"), and on the north and north-west by the North Dolfrwynog Mine.

Taking the old Dolfrwynog Mine as the centre of a district most peculiarly interesting, I propose to transcribe somewhat at length from writings of more or less authority thereon. Prof. A. Ramsay's geological description of the district will be read with interest:—

"Immediately north of the third milestone on the Dolgelly and Festiniog road a mass of very fossiliferous greenstone breaks through low part of the Lingula beds. It is about a mile in length from north to south, and extends from the road about three quarters of a mile westward. There are three lodes yielding copper on its eastern slopes and some gold. Mr. Byers, of Dolgelly, says gold was detected in one of them in 1826 by Mr. O'Neill. For four or five miles north of this area several other lodes occur in the Lingula flags and their associated traps on the banks of the Mawddach and the Avon-Wen. The accompanying section explains the geological relations of part of this country that lies between Rhobell fawr and the Cambrian rocks immediately north of Dolgelly. On the west are the Cambrian grits, dipping eastward at an angle varying from 40° to 60°. There are overlaid conformably by slaty beds of Lingula flags, traversed by greenstone dykes on the hills immediately north of Pizgwh. They are succeeded by a mass of intrusive greenstone, which is bounded on the north by an east and west fault and on the north part of Moel-Hafod-Owen. From this point the greenstone passes south, with two interruptions, by Tyny-Ben-rhos to Moel Cynwch, about two miles further south. East of this greenstone are a set of rocks which possess a very peculiar lithological character, and which occur very sparingly elsewhere, either among the Lingula flags or in any other geological area in Wales. It is in a lode traversing this country that the most important of the gold discoveries has been made. The rock commences at what may be called the south-west angle of Moel-Hafod-Owen above Buarth. The same east and west fault that bounds the greenstone limits it on the north; a line of fault drawn southward from thence to the west brooks join, nearly opposite Dolau, forms an eastern boundary so far. From thence the Avon-Wen forms its boundary for nearly 1½ mile south. It is not improbable that this may be also a continuation of the same line of fault. The boundary line crosses the stream, and still passes rocks southward to the ground that lies between the Cefnnewydd and the precipitous rocks that overhang the Mawddach above Doly-cleddy. The rock itself is one of those problematical masses to which it is difficult to give a definite name. In some places it is so hard and massive that a hand specimen is difficult to distinguish from some of the felspathic rocks of the neighbouring country. Even then, however, it is more or less flaky, and constantly passes into a talcose rock, which in places at the surface and in the lodes decomposes into a kind of loose unctuous clay. In many places it graduates in the line of strike into ordinary slaty rocks, which then become largely interstratified with it. As it passes southwards it becomes more and more silty and sandy, and passes by degrees into rocks possessing all the characters of the Lingula flags, on which rests the massive greenstone mass of Rhobell fawr. The ordinary Lingula beds spread far to the northward by Festiniog towards the southern slopes of the Mawddach and the Moelwyns. They are slaty and sandy by turns."

Mr. ARTHUR DEAN wrote (April 23, 1843):—"The general feature of the strata traversed by the Dolfrwynog lode is that of a fine clay slate, favourable to the production of rich mineral deposits, and interstratified with courses or beds of basaltic rocks, usually called by the miners of Cornwall elvan, and by the Welsh bar-stones. A peculiar feature connected with these mines is the issuing from the sides of the hill, towards their bases in the north valley, of strong springs of water, impregnated with copper in solution, which springs have flowed for many ages over and into certain turbaries which occupy the valley below them. As peat or turf when in a state of decomposition is strongly saturated with iron, the copper water has decomposed the iron, and precipitated the copper in its place, thus producing a rich mineral deposit on the surface of the ground. The turf has been dug up, dried, and calcined in kilns, which have produced large quantities of ash, varying from 10 to 20 per cent. produce, and which have realised 9000l.; nearly all these copper saturated turf beds have been destroyed, but their former existence has been adverted to in order to show that the mineral waters must flow from a source where, in every probability, an immense deposit of copper exists, as yet undiscovered; many attempts have been made to discover it, all of which have failed. Close to the steep side of the valley of the River Dolfrwynog, and running in a S.E. direction, is a ridge of ground formed by the outcrop of a course of elvan, about 2 fms. in thickness, and slightly dipping to the east; lying on the east face of this elvan, and running parallel with it, is an immense course of worked muffle or iron pyrites, which has produced several small bunches of 14, 2, and 24 tons of copper ore, in various small levels driven in from the east face of the hill. This mound contains also a quantity of very low copper ore, producing not more than 1 and 1½ per cent. The elvan also, which is much decomposed, is saturated throughout the whole of its thickness with green carbonate of copper, so that every little face or division of its parts is coated with a thin film, which makes the elvan worth 1 and 1½ per cent. for copper at a small depth from the surface. Although the mineral springs, which flow into the turbaries, before described, come out of the north face of the hill, and are at a distance of 200 or 300 fms. west from the lode, yet there can be little doubt that they have their origin near to, or in, the elvan or muffle course, and, being interrupted in their direct flow along their courses by a clay or flookan cross-course, they have appeared at various points in the north valley, where the strata have been sufficiently pervious to allow them to pass. Their appearance in these places has induced parties connected with the mine at different periods to drive low levels into the hill in a direct southerly direction, as they hoped to intersect the lode from which the water flows, and which they supposed to be the source of the mineral waters. In fact, however, the water is vain; the only appearance of a mineral vein met with is a small branch of spar, containing yellow copper ore, which branch is in all probability a lateral feeder or vein to the great muffle and copper course; nor is their failure surprising when it is considered that from the courses before stated the copper water comes from the muffle and copper course, which runs N.E. and S.W., in a direction parallel to that in which the levels have been driven from."

Other attempts to discover the supposed rich deposit of copper from which the water comes have been made by driving levels into the hill, and elvan courses from the side of the Dolfrwynog Valley, which runs parallel with them, but the parties connected with the adventure appear to have been contented to drive only until they cut the muffle, and then to cease their operations unless they found a bunch of ore, as no levels on the course of the lode appear to have been driven. All the attempts as yet made to open this mine have failed, because they have been unwisely conducted, but a rich and great mine may probably be obtained by a proper system of operations. The muffle course is much too rich and rank to make any great deposit near the surface, but if a shaft were sunk in the Dolfrwynog Valley to cut the lode to a depth of 50 fms. I have no doubt that the richest lode would be found to have disappeared, and rich copper ore to have taken its place; for a great and powerful course of pyrites like this is seldom found to be unaccompanied by rich copper ore—indeed, the old miners' adage shows that this observation has passed into the proverb, 'Muffle always rides a good horse.' It is not improbable that in depth the muffle course may strike through the elvan course to the west side into the clay-slate. The cost of seeing the lode 5 fathoms below the level of the valley would be about 4000l., as a powerful water-wheel would be required to be worked by water brought from the Dolfrwynog river, which is within 100 yards of the works."

MEMORANDUM (Assays).—Johnson and Cock, Feb. 19, 1844, for Mr. Harvey (Dolfrwynog): The light red gossan contains in the ton, fine gold 17 ozs. 2 dwts. 7 grs.; dark red gossan contains a trace of gold and 2 ozs. 15 dwts. fine silver to the ton.

Dr. A. Ure, F.R.S., March 5, 1844, for Mr. Harvey, analysis of sample of gossan, or ferruginous quartz rock:—Silica, 71.20; peroxide of iron, 24.60; alumina, 12.00; moisture, 2.50; gold, 0.03=98.73; loss, 1.37=100.00

(NOTE).—Hence 3300 grs. contain 1 gr. of gold, for gold are very rich.—A. Ure, J. Capt. Wm. Williams (June, 1846) wrote:—"This mine has been worked very extensively, but from the bad management in carrying on the mining operations it was abandoned at a depth of 11 fms. below adit, and from the soft nature of the ground the workings soon fell together, which have never been laid open since that period. This lode has been explored to a great extent in length, and I have seen it as much as 12 ft. wide, and that only part of its width, which is composed of one mass of hard arsenical pyrites and gossan. From examining the different levels cleared I find the whole of the riches extracted from this mine have been taken from east of the large flookan (cross-course), which by measurement is one cross cut level measures 107 ft. wide, and on the west side under the hanging wall of this large flookan the lode has not been laid open. Roberts's mine is certainly to the west of it close on your boundary, but whether it is on the Dolfrwynog lode is a question to be proved, and I see no reason why the lode should not be found as rich under this large flookan as over it. Roberts has risen a considerable quantity of valuable copper close on your property, and which lode is making into your right, where it can be worked and drained by levels to an extensive depth. It has been found by assays of Dolfrwynog lode that there is a quantity of gold in the sulphur

and gossan that it contains. This lode is embedded in clay-slate, the whole of which to some extent on each side of the lode is impregnated with copper and sulphur. The lode underlays south about 2 ft. in a fathom, and its direction is nearly east and west."

Mr. THOMAS KITTO, JUN. (June, 1846) wrote:—"This mine is well known from the great quantity of copper obtained by burning peat turf; several thousand pounds worth were returned from bog perfectly saturated with a solution of copper without any lode being discovered or traced. Several attempts have been formerly made to discover the lode whence this copper came by driving two cross-cuts of 200 fms. and 143 fms. respectively at separate points, and more recently a 55 ft. level, all without success; until lately a trial was made much further west, when a lode was cut in about 3 fms. driving of green carbonate of copper, partly in solution, of east and west direction, in a stratum of soft kilias and porphyry. About 8 fms. west from this cross cut there is a large flookan, north and south direction, from 8 to 20 ft. wide, composed of clay, &c. The lode opens in contact with this about 4 fms. wide, composed of gossan, spar, green carbonate of copper, sulphur, muffle, iron, and (they say) gold. The underlay is about 1 ft. in a fathom, a very large fine-looking lode, and evidently the same whence the bog was saturated. The assay of a stone of the copper gave about 11 per cent."

Capt. J. P. FULTON (1851) wrote:—"I very early in the morning proceeded to this interesting spot, went into level No. 1, which I shall designate the long level, this was said to be driven to intersect the lodes, but in fact it is driven, not at right angles with the lodes, but obliquely to the lodes. Here I observed at several points evidence of metalliferous deposits, and though there is not to be seen much ore in this level yet in many places there is exuding out of the branches copper in solution; there is also developed in this level the great flookan, many fathoms wide, and even this has metalliferous indications, besides it is a well known fact that all great deposits of ore, both in Devon and Cornwall, are more or less in what is technically called disturbed ground. I next entered the level further south down the river; this level, though driven very nearly at the same angle, has when it reached one of the lodes produced, I was told, several tons of ore, and the parts clear of rubbish show in places ore ground, but not rich. I next entered level No. 3 further south; here, though driven on the same angle in reference to the lodes, yet I have seldom seen more green matter than the sides of this level presents, indeed, it is a magnificent presentation of rich malachite in thin crusts. There does not appear from enquiry that any ore was sold from this level, nevertheless, I could not help admiring to see a mining term, its kindly appearance, and my ideas were exceedingly raised with the opinion that there must be some master lode not very distant. I next entered level No. 4; nothing very particular struck my attention here, except this circumstance, that every fracture of the rock presented rich sulphuric and arsenical pyrites and other kindly matter. Near to this sinking the new shaft—a very proper step to effect a trial of this ground. I went down the shaft, which is about 15 yards deep; here a very promising bottom presented itself. In one place a rich vein of sulphuric pyrites, 9 in. wide, seemed to have no order in its position, yet in another place a branch of flookan, equally irregular, and in every other place there was the pyrites, so that even the stones which the workmen's house is built with are all faced with that ore. My reflections were excited; I could not help thinking this was all evidence of nearness to still greater proof of a large lode. We ascended the hill considerably, and my attention was turned to a small excavation which we reached up on the side of the hill; this turned out to be a little digging on a splendid gossan lode, which further on was cropping up to the surface, its direction seems to be between levels No. 3 and levels No. 4, and north of level No. 5. I can only say this is one of the most splendid lodes I have seen for long time unworked; there is also a large quantity of pyrites further on, which I consider the same thing. In No. 7 I was particularly interested at seeing in the stuff brought from the level some very good copper ore, not from a regular branch, but interspersed throughout the great channel of ground, I offered an opinion that this should be planned, and a sample taken to ascertain its value. I fear it is hardly rich enough for commercial importance, yet in regard to future proceedings, for it must be seen from the foregoing details that I consider it a valuable property. I think trials must be made deeper before profitable results can be expected to occur. The best known lode here is the level No. 1, which I have recommended the gossan shaft to be driven, a shaft to be driven to the gossan lode, and a shaft sunk at the north side of the hill near No. 7 level to show the strata in a more settled state."

Prof. ANSTON, F.R.S., in a "Report on the Auriferous Lodes of the Mawddach Valley and Dolfrwynog, near Dolgelly, Wales," (1852) wrote of the Dolfrwynog Mines:—"They are situated near the well known Cwm-Eisen and Tyddyn gwalais Mines, and present many analogies with them. The lodes in the district are generally either parallel or at right angles to the bearing of the porphyry range, but exceptions occur. The best known lode here is the level No. 1, which I have recommended the gossan shaft to be driven, a shaft to be driven to the gossan lode, and a shaft sunk at the north side of the hill near No. 7 level to show the strata in a more settled state."

The whole district in the Mawddach Valley, where the Silurian schists are in a near contact with the greenstone porphyry, is in the highest degree promising for gold; and it appears to me that the case now merits the most careful investigation, but also with the schists. Very many careful assays will be needed, to show the exact position of the gold, and the rocks that may be examined with the greatest prospect of success; but few districts are more remarkable in the abundant presence of mineral wealth which are afforded by the surface indications. As a general conclusion I may state it as my opinion, derived from actual observation, that a very large quantity of auriferous rock must exist in that part of Wales, north of Doly, and at the western contact of the greenstone with the Silurian schists, and that investigation is being the position in view may be expected to produce results of some importance.—Feb. 10. T. A. READING.

(To be continued.)

THE FUTURE OF TIN MINING IN CORNWALL.

SIR,—It is clear that there are large and continuous supplies of tin to be got from Cornwall for still many generations if only fairly remunerative prices can be obtained. A consideration of the prospect of better prices than now ruling becomes then of absorbing importance. From the returns recently collected and published by Messrs. Sargent and Sons we gather that the supplies last year attained the extraordinary figure of 35,643 tons of tin, which was 5118 more than the preceding year, which itself had brought forth a far greater supply than any one year that had preceded it. Notwithstanding this unprecedented supply the consumption has so increased that the stocks on hand are only 1090 tons greater than at the end of 1874. In the face of this great and ever increasing consumption we have, at the end of 1875, a stock on hand of only 14,494 tons, being far less than six months requirements. Now, as Messrs. Sargent and Sons clearly show that we received two-thirds of the supplies from Australia during the first half of the year, their conclusion that supplies seem to be falling off from that quarter seems to be just. Assuming for the moment this conclusion to be correct, and that this falling off bears any proportion to the extent thus indicated, as Australia produced 7218 tons in the year, we have an indicated falling off on the year of 2406 tons, which would bring supply below requirements. In the face of that fact, and of the limited stock on hand, to what extent would prices not rise the moment this should occur? But conceding the probability of Australia falling off altogether, and allowing those who argue to the contrary to have it for the present all their own way, admitting for the sake of argument that the indicated falling off may be due to other causes, let us see how the matter stands then. We have before us a consumption which has gone on constantly increasing for many years; which increased from 25,577 tons in 1874 to 34,583 tons in 1875—an increase in the consumption of one year of 8006 tons of tin—it is likely there will be any check upon these increased requirements? This is not likely, and if not, see how quickly consumption can overtop the production. But it may be argued that production will continue to increase. We grant that to a certain extent it may; but this cannot go on indefinitely. Because great discoveries of tin have been made now for some years it does not follow that such discoveries are likely to continue being made. Discoveries of this as well as of other minerals have always hitherto come in spurts; one discovery following another for a period, and then all at once ceasing. It is useless to argue, as some have done, that because there are large districts apparently similar on the surface to those nooks and corners that have produced the tin, these large districts may be assumed to be equally as productive below. Every geologist and every searcher

after minerals knows that notwithstanding surface appearances the greatest dissimilarity and inequality exists below, and that therefore all calculations made from a surface survey only must be delusive. We have then to take the balance of probabilities, and in this precedent plays an important part. Many of us can very well remember when those then apparently ever-increasing supplies from Banca were said to be sufficient to forever shut up all the mines of Cornwall, and yet we have seen higher prices paid for tin since then than ever before dreamt of. French, Spanish, Mexican, and Bolivian mines have each in their turn been going to swamp us altogether, and yet the returns from all of them have not injured us much. Now Straits and Australia are affecting us detrimentally, indeed; but the writing on the wall seems to read that they have reached, if not the limit of their capacity of production, their capacity of increasing that production to the extent the requirements of the world demand, and in either case the end of depressive prices is foreshadowed. The just conclusion from all we can thus gather of the present state of the tin production and consumption appears to be that we shall see far higher prices paid for tin than any hitherto known, and that the commencement of better prices than those now ruling is not distant.—Redruth, Feb. 9. W. TREGAT.

WHEAL GRENVILLE.

SIR,—As an old shareholder in this mine, and one who has faith in the present management, may I ask who is Mr. "F. L. A. T. Rodda," whose letter appears in the Journal of January 29? Is the "Argus" dished up in another form? As he is said not to be a shareholder, his solicitude for our welfare can scarcely be considered to arise from disinterested motives, and the shareholders will willingly release him from his gratuitous promise to "write again shortly as to how things are going on." In the meanwhile he may, perhaps, profit from a little wholesome advice—mind his own business, and leave the shareholders to manage theirs. He must be, as his initials convey, very flat if he thinks that his agitation at this early period will influence the shareholders against the new direction which they have recently appointed after due investigation and regard for their own interests. To show the honesty and fairness of "F. L. A. T. Rodda's" intentions, I need only observe that Captain Hodge entered upon his duties at the mine on Jan. 12, when he found the lower levels under water. Is it reasonable at this early period to look for a sudden recovery from past mismanagement?

AN OLD SHAREHOLDER.

WHEAL GRENVILLE.

SIR,—I fully expected Mr. Lane would reply to my letter, and is fully anticipated he would do his best to pervert my statements, accuse me of not speaking the truth, and slip away from the facts of the case. In Mr. Lane's eyes no one can possibly be truthful who opposes his views or plans. Before I write further let me assure him that I am not "one of the disappointed whose services Capt. Hodge, who has the sole control of the working arrangements, found it necessary to dispense with." I have not yet seen Capt. Hodge, but I have heard quite enough from reliable sources to feel pretty certain that he is not the manager of Wheal Grenville, but is simply the nominee of Mr. F. G. Lane—the manager in chief. Mr. Lane actually distorts my statement about the estimated costs and returns. What I said was that "at the last general meeting the committee estimated the expenditure for the next two months at 5000l. per month, and the returns of tin at 6000l. per month," and that the first month's cost of this estimate would be about 1500l., and the returns of tin probably 4500l. Mr. Lane does not deny my statement, but shuffles away from it by saying the cost was the last one of the old management, and seeks to evade his responsibility as one of the committee who framed the estimate. The management was changed on Nov. 19, from which date the committee, or in other words Mr. Lane, have had the sole control of the mine. Mr. Lane boasts of Capt. Hodge having obtained 15s. per ton more for the tin than that obtained by the adjoining mine. What is the fact? The extra price was given because tin had stiffened in price, and upon an assurance given by Capt. Hodge that he would take the next parcel of tin to the same smelting-house. Mr. Lane may deny this, but Capt. Hodge cannot. Mr. Lane brings forward the fact of a reduction of the dues, as a proof of the opinion entertained of the present management. The dues have been reduced from 1-24th to 1-30th on strong plea placed by the committee before the lessor, who of course knows well through his toller how the mine is looking, and would be likely to reduce the dues rather than lose them altogether. Has Mr. Lane any other shareholder been down here and heard for himself the general opinion upon the present as contrasted with the past management? As regards the merchants, whose bills Mr. Lane boasts as now paid with the monthly labour costs, when those merchants see this unblushing statement they must form, if they have not already done so, a not very favourable estimate of the character of the present town management. What are the facts? When the last labour cost was paid the merchants were rendered the amount of the supplies for the current month, less 2½ discount, when at the very time there was a large amount for former supplies owing to them. Of course, as may be supposed, the merchants refused to submit to this piece of sharp practice. All these statements are simply devices to divert the attention of the shareholders from the more serious part they ought to consider, and which is, has Mr. Lane by inducing the shareholders to give him their proxies to carry out certain designs of his own effected that beneficial change in the affairs of the company he asserted he should? In his circular to the shareholders, dated Oct. 23, he wrote: "You will perceive by the last statement of accounts that the quantity of tin sold during the last quarter shows an excess over the previous one. This I attribute to the agitation commenced by me at the July meeting." On Oct. 29 he wrote to the shareholders: "I am convinced that a change (i.e., in the management of the mine) would be beneficial." Now, let us see the result of all this. The last month's sale of tin before any change in the management was made was 724l. The first sale after Mr. Lane's "beneficial change" had taken place was 620l., the second sale 582l., and the third (the one estimated by the committee at 600l.) was 600l. Now, here is a gradual and serious falling off in the returns immediately Mr. Lane became associated with the management. As an "agitator" for a reformed executive he could cause the returns to increase, but as one of the managers his exertions result in a serious falling off in the produce. At the last general meeting the committee said "they saw no reason to doubt they will be able ere long to bring your mine into a very different and far more satisfactory position," and yet within a month, a little month, after this is spoken the estimate of a month's loss is just doubled. This is bringing the mine into a very different position with a vengeance. At the same meeting Mr. Lane said that "it was through Capt. Hodge he had first begun to move in this matter at all. He was told by him the management was expensive, and that under it the mine could never make profits," and he further said that if the meeting engaged Capt. Hodge "they would very soon find themselves in a much improved position." Well, Capt. Hodge after being highly recommended by Capt. Secombe, a relative of Mr. Lane's, is made manager, and what will the adventurers think of their improved position at the next general meeting? To us non-shareholders here of course all this is ludicrous in the extreme. I suppose I am not revealing any secret in saying that which is now well known, that one of the committee has disposed of his shares, and is no longer a shareholder. We may never know his reason for so doing, but does it look as if the present management is all so admirable and satisfactory as Mr. Lane wishes his fellow-shareholders to believe? Most injudicious changes have been made at surface on the mine; I suppose on the score of economy, Mr. Lane's object doubtless being to reduce the loss as much as possible, but in making this attempt is he not hastening the inevitable which everyone down here can plainly see is before him? Even the engineers have been dismissed to effect a saving of 2l. 2s. per month. From the long line of flat-rods attached to the engine is burthened by an enormous strain, and should a breakage occur at night with no agent and no engineers on the spot to attend to the accident at once the adventurers would find years of these paltry savings swallowed up by one serious expense. In his circular of Nov. 18 to the shareholders the late secretary wrote as follows: "I have all along opposed his (Mr. Lane's) views and pro-

positions, which I have believed, and still believe, would not if adopted prove beneficial to the company." Here is candid and honest advice, the correctness of which is confirmed in less than three months after it is given. Yet the majority of the shareholders refused to listen to it, and to a Stock Exchange share-jobber entrusted their proxies to get rid of this and the other officials of the mine. They would not listen to their late secretary's warning, and perhaps their ears may be as firmly closed to mine, but I will record it nevertheless. When a medical man sees some deadly incubus endangering the life of one of his patients he does his best to get rid of it at once. The vitality of Wheel Grenville is being endangered by a similar canker in the shape of a committee. My simple and brief advice to the shareholders is get rid of it.

Cambridge, Feb. 7.

F. L. A. T. RODDA.

ROMAN GRAVELS MINE.

SIR,—In the Journal of Jan. 22, at page 83, Messrs. Mansell and Co., in their remarks on the Roman Gravels Mine, speak of the quarterly dividends paid by the mine. Will you allow me through your columns to ask when these reputed quarterly dividends are paid? Since December, 1874, only three dividends have been declared—in May and September, 1875, and a third this month; that is to say, at intervals of five, four, and five months respectively. While writing on the subject, may I ask where are the 300 tons a month promised by the captain of this mine for 1875? Shall we have them now the mine is improving?—Feb. 8.

LECTURER.

OLD TREBURGETT MINING COMPANY.

SIR,—I am much obliged to "A Shareholder" for his able letter which appeared in the Supplement to last week's Journal. The unreasonable rate of the dues charged is most extortionate, and I hope, for the good of mining generally, that such cases are very few. I am surprised the lords do not see that if they were more generous with regard to the dues it would be greatly to their benefit, as the stuff which I understand is thrown on one side would, I have no doubt, be brought to market, thereby increasing the revenue of the lords, and also make a good profit for the shareholders. I do not see the utility of working the mine on such a one-sided principle, but I hope some arrangement may be made with the lords for lighter dues, and the mine worked entirely for the shareholders' benefit.

—ANOTHER SHAREHOLDER.

OLD TREBURGETT MINING COMPANY.

SIR,—The admirable letter of "A Shareholder" in the Supplement to last week's Journal, showing, in his opinion, the impossibility of the mine paying any dividend so long as the exorbitant royalty of 1-10th is exacted, demands the serious attention of the shareholders at the coming annual meeting. At that meeting I hope there will be a strong muster, to give expression to their views upon this important question. I think the shareholders should know who made this injurious bargain, and whether the royalty of 1-10th was set forth in the prospectus. I thank the shareholder for his timely letter, and I hope the royalty question will be agitated until we get this unjust impost reduced to the limit which will give the shareholders a fair return upon their capital.

Feb. 9.

—ANOTHER SHAREHOLDER.

(For remainder of Original Correspondence, see to-day's Journal.)

Meetings of Public Companies.

NEW BRITISH IRON COMPANY.

A meeting of shareholders was held on Monday at the Cannon-street Hotel for the purpose of considering the desirability of placing the company under the provisions of the Limited Liability Act. It had been announced that Mr. George Clive, M.P., would take the chair, but in his unavoidable absence, through indisposition, his son, Mr. ARCHER CLIVE, barrister, was voted to the chair, on the motion of Mr. George Moffatt.

The CHAIRMAN read the notice calling the meeting, went on to say that his father had been a director and trustee for many years, and was also a large shareholder in the company, and it was mainly owing to his efforts, and to the efforts of one or the other gentlemen, that the meeting had been called to-day. For his own part he felt that there were many gentlemen whose occupancy of the chair would be more desirable, but as the duties were more or less formal he had consented to fill it, and he hoped he should perform the duties to the satisfaction of the gentlemen present. (Hear, hear.) The shareholders in the company (which was an old company) were all aware that it was originally constituted on the principle of unlimited liability, and still remained so, and it did not require much knowledge of law or business to know that a company with limited liability was much more desirable to hold shares in than a company constituted on the unlimited liability principle. This had been recognised by law, the Legislature, and by trade, although it might be called almost a recent discovery that the safest way to the shareholders of conducting a trading or commercial undertaking was that a man's responsibility varied with the amount of his interest, and that it should not be confined to the principle of having a man's whole property liable to be swept away at once from holding one or two shares in an unlimited company. Many years ago the directors considered the question whether the company could not be made limited. His father was one of the earliest movers on the subject, and had remained most constant in his efforts to carry it out. At first the answer was made that it was impossible, which was certainly a sufficient answer if it were true. So the matter remained for some time, but after almost incessant efforts on his father's part it was resolved to submit the question to eminent counsel (Mr. Cotton, Q.C., and Mr. G. W. W. Holmes), and those gentlemen gave it as their opinion that the company could be placed under the Limited Liability Act. It was right to say that counsel pointed out certain difficulties, and they also referred to the question of expediency, but this latter question was rather a question for the shareholders themselves to decide. The directors having obtained this opinion, circulated it amongst the shareholders, together with a pamphlet expressing their views; to that pamphlet an answer was returned by gentlemen who did not agree with the expediency of the change, to which an answer was returned by his father, Mr. G. Moffatt, and Mr. G. W. W. Holmes, and it being then considered that the purpose of raising the question as to whether it was expedient to adopt the principle of limited liability or not, and to pass a resolution thereon. He would point out that if the company was transformed into a limited liability company the trustees had a right to an indemnity at the hands of the shareholders. (Hear, hear.) His father, as a trustee, was perfectly ready to take his share of the risk, provided the proper indemnity was given. In conclusion, the Chairman invited discussion on the subject.

Mr. GEORGE MOFFATT said there was only one director present to-day besides himself. His own conviction was that no trading company ought to be conducted on the principle of unlimited liability. The shares which he represented had contributed to this company over 50,000, and he was quite willing that the corpus of that property, and all the credit which that property could bring, should be at the command of the directors, but he wholly dissented from the principle which gave the directors power to pledge his property to any amount without his having any power over the contracts by which his property might be endangered. The desirability of limited liability in an undertaking of this sort most so strongly commended itself to the mind of every mercantile man that he was almost ashamed to stand up here to say a word in its favour. He referred to the large number of old trading companies which in recent years placed themselves under the Limited Liability Act, by which the shareholders had been placed in a safe position, and the value of the shares had risen in value in the market. He referred to a letter in a recent number of the Times, in which the secretary of a coal company stated that in all human probability there was no "human probability" of Corrie and Co. turning out winders. He referred to the difficult position in which executors were placed who had to deal with property when there was unlimited liability, and went on to say that there was no doubt the unlimited liability in this company had been the main cause of any was a sound company, and respectfully conducted, but they must consider leave them a property which might, if not judiciously managed, deprive them of all they possessed. He believed there was no insuperable difficulty in the way of placing this company under the Limited Liability Act, as a proof of which he referred to the case of a company in South Wales, in which he was interested, which had been transferred from an unlimited to a limited company with the most beneficial result. He moved the following resolution:—"That in the opinion of this meeting it is expedient that the New British Iron Company should be registered under the Limited Liability Act." Mr. HALL seconded the resolution.

Mr. S. J. WILDE said there was no doubt that limited liability was by far the best principle upon which to conduct a company of this description, but he pointed out that it was most desirable that a limited liability company should have some amount of unpledged capital, otherwise in bad times it would be almost impossible to carry on. He thought the share capital should be increased so as to give such a credit to the company. The present shares were 20s. each, with 17s. paid; shares 30s. instead of 20s., and divided into two classes—A, original shares, have a substantial unpledged capital, with 13s. unpledged, which would be given to the trustees.

Lord CLAUDE HAMILTON warmly endorsed the remarks of the previous speaker relative to the desirability of putting the company under the Limited Liability Act, and he fully agreed that an indemnity should be given to the trustees. When they had passed a resolution for placing the company under limited liability, it would then be time to go into details. He alluded to the danger in which the shareholders stood of having all they possessed taken from them in the event of any misfortune occurring to the company, and expressed his earnest hope that the proposed change would be carried out.

The resolution was then put, and carried with only two dissentients. Mr. MOFFATT said the next question was how best to carry the resolution into effect. The board consisted of eight members, only two of whom had expressed themselves in favour of the proposed change, though possibly others might be in favour of it, if they clearly saw their way to the proposed change being legally carried out. The constitution of this company was somewhat peculiar: there were upwards of 20,000 shares, but 11,000 of these had no voting power, and this could not be carried out to the full. This was due to no spirit of hostility to the present board, but simply with a view of enabling the proposed change to be carried out. The resolution was seconded by Mr. WILDE, and carried unanimously.

Mr. G. MOFFATT said it might be interesting to the shareholders to know that five shareholders had sent in papers, representing 527 shares, in favour of remaining under unlimited liability, whilst twenty shareholders, representing 11,400 shares, wished to be under limited liability. A vote of thanks to the Chairman closed the meeting.

IMPERIAL BRAZILIAN COLLIERIES COMPANY.

An adjourned special general meeting of shareholders was held at the City Terminus Hotel, on Monday.

Mr. JOHN O. SUTHERS in the chair.

The SECRETARY read the notice convening the meeting. The CHAIRMAN said the present was only an adjournment. He was sorry to have to announce that the proposed scheme for raising additional capital had proved a failure. The number of applications received had been 13, representing 830, and there were conditional applications representing 240, so that all he had to do was to report the scheme had entirely failed. He should mention that there had been a prospect of success the board and the committee would have subscribed in the same proportion as the other shareholders. Since they had been in that room three letters had been received by the Brazilian mail. One was from Mr. Jones, who, it would be remembered, had been requested to endeavour to obtain a contract from the Brazilian Government, or some financial aid towards developing the collieries. The letter was as follows:—

Rio de Janeiro, Nov. 24.—I have just written to England advising that after much delay our coal affair is again moving. The Minister of Marine sent the papers to be reported upon by the Board of Naval Construction, and I am happy to inform you that it was of course sent out to the company, and given to a contract. The Minister, however, desiring very probably to strengthen his action for doing so as much as possible, sent all the papers to the Office of Agriculture to be informed whether the company was worthy of the favours recommended to be dispensed to it by the board referred to, and if so, that that ministry should also operate in the aid which is required by contracts. I have already been promised a favourable and speedy solution of our affair from the Office of Agriculture, and hope now in a short time to be able to advise you of the success of our efforts, and in this hope have the pleasure to remain, Sir, very respectfully, Y. F. JONES.

The CHAIRMAN said it appeared there was still very good ground to hope the Brazilian Government would give them a contract, and read the following letters from Mr. Tweedie:—

Sao Jeronymo, Nov. 25.—This will confirm mine to you of the 9th ult. Senor Porto, of Rio de Janeiro, having lately visited some of his large estates in this part of Rio Grande, I took the opportunity, while he was in the neighbourhood, of showing him over the mine, and explaining the present position of the company, in the hope that he, as an influential gentleman, holding a high official appointment under the Emperor, would exert himself in our favour in connection with our application for a grant for boring. He expressed himself pleased with what he saw, and promised to use his influence with the Government on our behalf. On his departure for Rio de Janeiro by the last mail, I presented him with a copy of our petition to the Imperial Government, asking for a grant of £8000. In reply to my letter of the President of the Province (copy of which I forwarded to you with my report of Sept. 14, 1874), the time for the exploration of the mine by the company has been extended to Oct. 6, 1875. Enclosed is a copy translation of the official extract, published on the 19th of the present month. Our financial position here is growing daily more embarrassing, and the creditors are becoming more and more pressing in their demands. I am now continually receiving communications from them, asking for payment.

Sao Jeronymo, Dec. 7.—This will confirm mine to you of the 26th ult. On the 4th inst. I received a most encouraging letter from Mr. William Francis Jones, a copy of which I enclose. If we obtain an order sufficiently large to pay working expenses it will be of the greatest importance to us, even if the order remain in force for a few months only. It would greatly reduce the cost of boring, as this latter operation would thereby be relieved of many heavy standing expenses that it will otherwise have to bear; the Government would further enable us to penetrate into the existing seam, and ascertain if its quality improved sufficiently to allow of the permanent working of the present seam.

Finance: My report of the 26th ult. gave a detailed account of our financial difficulties here. These, of course, become greater every day, and unless I receive some immediate pecuniary aid I shall not be in a position to execute the Government contract when obtained.

Sunties: On the 29th ult. a heavy storm swept over the district, the violent wind doing considerable damage. Fortunately, the works sustained no injury whatsoever, although some of the roofs of the buildings were severely tried. The workmen's cottages, however, being for the most part rotten, were much damaged. The thatched roofs were stripped off by the wind, and in some cases the whole structure was blown down. The inhabitants are endeavouring to patch up those of the cottages that yet stand with the debris of those that have fallen. We have still several workmen waiting about in the hope that the mines will recommence working, and now that the extension of the Porto Alegre Railway is on the eve of completion there will be large numbers of their workmen out of employment. The present time is, therefore, most favourable for a recommencement of our work, as labour will be obtained at a considerably cheaper rate than heretofore.

In reply to your statement "that the directors wish me to suggest to you that as there appears to be so little doing at the colliery just now, it might be well for you to go again to Rio de Janeiro, and urge the Imperial Government to sanction the contract for our coal," I beg to remind you that our present financial position here places it quite out of my power to act upon the suggestion. The directors are surely aware of the fact that I am now, and have been for some time past, entirely destitute of funds. They themselves acknowledged the serious position of affairs here as far back as April 23rd, deeming it advisable, even at that time, to send out their last 5000. That sum, as you are aware, has never yet been received here, while our liabilities have necessarily gone on increasing month by month, until now we have the large sum of £3,322 due for salaries alone up to the beginning of this month. As I explained to the directors in my last, I have for some time past been compelled to pay the wages and incidental expenses out of my own pocket, in order that the works may be kept in an efficient state; the salaries of my staff are also greatly in arrears, and I myself have upwards of eight months' salary unpaid.

Independently of the fact that I am without the funds requisite for a second mission to Rio de Janeiro, such a journey, in my opinion, would prove of no benefit whatever to the company. As far as the Government contract is concerned, I did not that day lay in my power, the time for the matter before leaving Rio, and Mr. Jones can well be left to bring the affair to a conclusion. The only thing left for me to do in a second visit to Rio would be to endeavour to negotiate the sale of the company either to the Imperial Government or to other parties who might be induced to become purchasers. In my opinion, such a proposition would be premature before the decision of the Government was known in the matter of the contract, as the application for the contract is made with a view of saving the company from a stoppage. A proposition to sell would acknowledge such a stoppage to have taken place, and the Government, having no further inducement to help us, would rather endeavour, if it could be induced to purchase, to make the best bargain possible in its own interests. From my experience in this country I am convinced that such a negotiation as the sale of the colliery to the Government, even if ultimately successful could only be brought about after considerable delay and expense. At the present moment, when we are, as I have every reason to hope from Mr. Jones' letter, on the eve of obtaining the Government contract, I feel convinced that it would be most unadvisable in the interests of the company to make any proposition to either Government with a view to sale. If, however, the directors think otherwise, and wish me to make a second journey to Rio, I shall of course be ready to carry out their instructions in the matter as soon as I have funds placed at my disposal to enable me to do so. I should, however, deem it a most unfortunate circumstance for the company were my absence from the works at the present juncture found to be unavoidable, as it is of the greatest importance at the present moment that I should be here on the spot if the company's affairs are to be kept from drifting into confusion, and the property kept intact. Our liabilities here are of necessity increasing, our creditors have become impatient, and require to be speedily dealt with, while in another month, unless some arrangement can be made in the meantime, I shall be deprived of the services of my staff, and thus be unable either to execute the Government contract if obtained, or even keep the workings dry. These reasons, will, I trust, satisfy the directors that it has been, even if advisable, certainly impossible for me to act upon their suggestion to again visit Rio and try and negotiate the sale of the colliery to the Government. I anxiously await your next communication, which I trust will be accompanied by the now long expected remittance, which is now absolutely necessary before I can take any further action whatsoever.

This concluded the business of the special meeting.

The adjourned extraordinary general meeting was then held.

The CHAIRMAN said this meeting was originally convened for the purpose of considering the position and prospects of the company, and the expediency of a voluntary winding-up. The board and the committee had fully considered the matter in conjunction with Mr. Webb, who had taken counsel's opinion, which was that they might be running some risk of forfeiting their concession if the company were to wind-up. Mr. Webb would, therefore, propound a scheme which would prevent that risk, and at the same time save the expense. The scheme met with the approval of Dr. Goodsall and Mr. Maude, as well as the members of the board.

Mr. WALTER WEBB said he had taken the opinion of counsel, Mr.

Westlake, Q.C., who considered that the concession might be endangered by a winding-up—that is to say, the Imperial Government of Brazil might refuse its sanction, which it would be necessary to obtain. It was pretty obvious, then, that the shareholders should hold their hands, and not pass a resolution to wind-up. If the shareholders could induce the debenture-holders to stay any proceedings that might have that effect, there was a hope that some benefit might accrue from the reversionary interest in the company. Debenture-holders had no interest in winding-up the company, because they could not get funds to continue the boring, and, therefore, the operations must soon come to a standstill. Under these circumstances, it was difficult to suggest anything feasible. As to the chances of obtaining a purchaser of the property, that would be much more likely to take place in a company as a going concern than one that had gone into liquidation. The directors had power to enter into negotiations for selling the property, and a better price would be obtained by a company than by a liquidator. Mr. Jones was negotiating in Brazil for a contract with the Imperial Government; Mr. Tweedie told them that if a contract were obtained the whole working expenses would be met, and means might be obtained for boring to the lower seam, in which case the debenture-holders' interest would be secured. He would suggest that the directors should be good enough to continue in office, and in conjunction with the debenture-holders endeavour to effect a sale, and failing that, that they should endeavour to co-operate with the debenture-holders to obtain the best possible offer from parties willing to supply the means to carry out the boring operations. A speculative lender might be found to advance 2000, or 3000, for this purpose. If the operations should prove successful he could be paid a large bonus. He had no doubt the sanction of the shareholders would be obtained if the debenture-holders could be induced to hold back and subscribe further funds to keep the affair alive. Such an arrangement would be more to their own interest than passing a resolution to wind-up.

The CHAIRMAN said the board quite agreed in the advisability of the course proposed by Mr. Webb, but it must be quite understood that the debenture-holders must be prepared to subscribe according to their holdings, because they were told in these letters funds were wanted immediately. Mr. Tweedie told them they could not go on without money; 1200, was due for debts; 520, over due for salaries and wages. He did not know the law in Brazil, but according to the *Código Napoleão* it was most likely to be the law there, unpaid labourers could attach the property. He would suggest that Mr. Tweedie should be written to, explaining the position of the company, and requested to ask the creditors to wait until funds should be forthcoming. It would be absolutely necessary the debenture-holders subscribed a certain amount. Within the last two or three days a letter had appeared in a daily newspaper; it had not emanated from any of them, nor had they the slightest idea where it came from. It was, however, evidently penned by one who knew all about the company, and the directors quite agreed with the writer that it would be a lamentable thing for the property to pass out of the hands of the present owners just when it might be on the verge of success. The board would be happy to do all in their power, and he would personally endeavour to find some speculative man who would advance the money necessary to carry out the boring operations.

Mr. MAUDE suggested that the trustees—Lord Bingham and Mr. Bridges Williams—should be elected directors, so that each class might be represented on the board.

The CHAIRMAN said that nothing would be done without the consent of the trustees—Lord Bingham thought the best way would be for the trustees to act in concert with the board, and suggested that they should give Mr. Webb a power of attorney.—Mr. Webb said it was absolutely necessary the debenture-holders should supply further funds. He could not imagine there would be any difficulty in providing the amount necessary to keep the concern together, so that it might be sold as a going concern—that was an indispensable condition.

After some further discussion, it was resolved upon the proposition of Captain George Fowler, B.N., seconded by Mr. PALMER, "That in view of the danger of the company's affairs, and the fact that the directors had been requested to co-operate with the debenture-holders, with the object of saving the property, if possible, for the shareholders, and with power to borrow money on such terms as they may deem expedient; and the directors are hereby authorised to enter into possession of the company's undertaking for and on behalf of the debenture-holders, and, if need be, to incur in the sale of the property, the debenture-holders providing the necessary funds from the date of possession being taken, upon special terms, if thought proper by the directors. And for the purpose of carrying out this resolution, the fullest powers are hereby conferred on the directors."

A vote of thanks was passed to the Chairman and directors, and the meeting then separated.

WELSH FREEHOLD COAL AND IRON COMPANY.

A liquidator's meeting was held at the Guildhall Hotel, Gresham-street, on Monday.—Mr. GEORGE WEBB in the chair.

The CHAIRMAN explained that the meeting had been called together by the liquidator, and the object was to invite them to listen to a scheme for the re-construction of the company; he would, therefore, call upon him to lay it before them.

The LIQUIDATOR said that he had had a somewhat difficult task to perform, having been appointed by the shareholders, and, therefore, representing them whilst he was under the control of the Court, and in that capacity represented the creditors. There had been much difference of opinion as to the mode of liquidating the company, and delay had been occasioned thereby. On Sept. 14 a resolution to wind-up voluntarily was passed by the shareholders, and it was confirmed on Sept. 29. A petition had previously been presented by Mr. Snooks, who maintained that the interest of all would be better served by a compulsory winding-up. On Nov. 6 Mr. Snooks's petition came before the Court, but the hearing was postponed until Nov. 13, when his appointment was confirmed. The solicitor to the petition appealed against the Vice-Chancellor's ruling, so that the business of liquidation was suspended. On Nov. 12 the first mortgagee's interest became due, and he was anxious to meet the shareholders now, as the mortgagee was at present preparing conditions of sale, having given notice that he would sell on Jan. 15, or three days after the power of sale accrued. He had not had time to go into the details of the scheme so closely as he could have wished, but was compelled to lay it before them in its present state from the fact of the property being about to be sold. The capital at the time the liquidation commenced was 16,943 shares of 5s. each, and 84,539s. 9s. 6d. was the actual capital put into the concern. There is a balance of an amount deposited in the hands of trustees for the payment of a guaranteed dividend, and the opinion of the Court will have to be taken as to how that balance shall be disposed of. He should explain that there are two mortgages. Upon the first, of about 8000, there was interest amounting to 253s. 11d. due on Dec. 31, and the second mortgage is 8000, so that there is something over 16,000 mortgage on the property, and about 9000, was due to creditors; but as some of this was disputed, they might reckon that 8000, would rank for dividend. The purchase-money was 11,200, but whether that was a sum which would have to be determined hereafter, and he thought it would be 8000, for which the directors had made themselves liable, and which could be recovered from them. They had applied the amount to the ordinary working of the company instead of handing it over to the trustees for the guaranteed dividend. Briefly, their position was this—they owned 8000, or about 8000, net, and they had only the property to pay it with. If the property were sold by the mortgagee they were not likely to get more than the mortgagee's money for it. There had been 31,543, 6s. 4d. spent on the property, the property was freehold, and the railway, which had been constructed, must be of some value for the future working of the concern, so that he would ask whether it would not be better to give up the amount of the guaranteed fund now in Consols, and which, perhaps, might be due to the shareholders, and endeavour to reconstruct the company. His scheme was this—he would issue 15,000, debentures, which he thought would be sufficient (considering that the second mortgage would reduce his interest to 6 per cent.) to carry them on until better times. He would ask every shareholder to subscribe twice the amount of his interest in the guaranteed fund to which he is entitled one-half to be credited as his proportion of the guaranteed fund, and the other half paid in cash. He estimated that the creditors could be compounded with at 10s. in the £, payable in debentures. By this arrangement 8000, would be taken by the shareholders entitled to the guaranteed fund and 4000, by the creditors, leaving 3000, to be subscribed for otherwise. With the 6000, working capital thus placed at their disposal they could erect the engine and work the seam to the deep, such seam promising to improve as developed; but of course it remained to determine whether they would do this or not. He might tell them, however, that unless they could at once subscribe and pay the first mortgagee's interest, he had the sanction of Messrs. Newman, Dale, and Streeton that the property would be forthwith wound-up, and he did not hesitate to say that in that case the shareholders would get nothing.

Mr. BERTHELL enquired how many shares had been issued, as he would like to know whether the body was worth reconstituting.—Mr. STALLARD said that 41,000 went to the vendors, and were not to be transferred without the amount re-presenting them being paid to the guaranteed fund.

SHAREHOLDERS would remind the meeting that the debentures which Mr. Stallard suggested would only be third mortgage debentures.

Mr. MAJOR enquired who claim the proprietors of the Nant-y-var property had against the company.—Mr. STALLARD said the amount was 763s. to Christ mas.—Mr. MAJOR declared that there was no coal to be got from the company's own property without sinking a shaft; that all the coal to be got is in the Nant-y-var property, and that all the coal that the company had obtained had come from the Nant-y-var property.

The CHAIRMAN said that as Chairman of the meeting, and as the representative of Messrs. Snooks and Tenon, it was his duty to point out a few facts. He hoped that all of them were innocent of the formation of public companies, and assuming this to be so, he would give them a few facts as to how a public company is constructed, and how the promoters are covered. The real theory was always to cover the retreat of the promoter. He might tell them that Mr. Stuart went forth into the world to purchase this worn-out colliery, and he had traced as far as he could trace that Mr. Stuart concluded a provisional contract to pay 12,000, for the whole property; Messrs. Dolby and Streeton had much to do with this transaction. It was since represented, and Mr. Stallard had made an affidavit to the effect that he considered it worth 40,000. But they must remember that the company was formed with a capital of 155,000, and 103,250, was to be paid to Mr. Stuart as purchase-money. Of the 155,000, for the public contributed but 8000, and there was then an arrangement by which Mr. Stuart at once reduced the 103,250, by 30,000; and the cash which the glib public subscribed being so small, Mr. Stuart consented to take 12,000, in cash (an amount which still left a fair balance over the 12,000, which he was to pay), and the remainder in shares. Now, they would find by their Articles of Association that they were to have one vote for each share up to 50 shares, then one vote for each 10 shares, and so on, the result being that 8000 votes were in the hands of the public, and 8100 in the hands of Mr. Stuart, who, by transferring a few fifties to nominees, could always command a majority at the

COMPRESSING AIR.—The invention of Mr. T. S. DISSTON, of Philadelphia, U.S., relates to apparatus to be employed more particularly for obtaining

a continuous supply of compressed air, and consists in the combination of two or more revolving vanes having curved sides, two or more revolving segments with intervening concave recesses adapted to the said vanes, a chest or casing adapted to the vanes and segments, and a valve or valves operating in unison with the vanes segments, and recesses, for controlling the outlet of the blast.

FOREIGN MINES.

BERNHARDT AND AURORA.—The directors have received a further shipment of 20 bars of silver, valued at \$7000, which completes the out-turn for December.

SWEETLAND CREEK (Gold).—The directors have received a telegram from their agent, Mr. G. D. McLean, announcing a clean-up resulting in a gross return of \$18,750, a profit of \$3750, and a remittance of \$3750.

TECOMA.—Telegram from the company's manager in America: Sold ore sufficient to pay two months' expenses. Mine looking well.

RICHMOND CONSOLIDATED.—Cablegram from the mine at Eureka, Nevada: Hall, London: Week's run, \$35,000. Ore continues low in lead.

—R. Rickard, Jan. 20: No. 1, slope in the back of the 800, is improved since last week; it is now turning out ore of very fair grade. No. 2 slope, in the back of the same level, is poor; we are now putting up a rise from the slope, and sinking from the same. The winze below the 800 has been sunk 92 ft., all in good ore. It had a sample taken from the whole depth and had it assayed; the results were 37 per cent. of lead, and \$66 gold and silver per ton. At a depth of 92 ft. we struck limestone. We are now drifting on each side, and shall again sink another winze to a level with the 700 drift, commencing from the shaft; also open on the ore body to ascertain the size of it at the present depth of the winze, 92 ft. There is nothing met with in the 800 or 600 cross cuts; the ground is hard, and slow progress is being made. We have cleared the winze on the west side of the hill; the total depth on the main drift is about 100 ft. We started this morning a drift in the ore to prove the size of the ore body. We have not yet started the 800 drift from the main shaft, and shall begin on Monday to hoist the water that has accumulated in the bottom, and by Tuesday or Wednesday shall begin to cut the 800 station. Smelting: Last week we had only two furnaces running, No. 1 being under repair. It was started yesterday. The other two will require re-lining soon. We are now using half coke with half charcoal, the furnaces working very well with that mixture. We have had very heavy snowstorms of late, and the roads are very heavy for hauling, consequently coal is coming in very slowly.

EXCHEQUER (Gold and Silver).—L. Chalmers writes, Jan. 17: "We cut through the lode on Wednesday to the hanging wall, and found it held and well defined. I immediately let the shaftmen cut a drift 100 ft. north on it at \$3 per foot. I let it to them because the new pump pipes for the last 100 ft. I had not arrived; they, however, arrived yesterday (400 ft. of 4 in pipe to replace our present 2 in., using the 2 in. for steam). This is rendered the more necessary that in cutting the vein at the 300 we have got more water, though nothing to bother. On Thursday we struck very rich ore in the 140 winze, which I am now sinking and hope to get to the mill, if I succeed in opening the road, which I shall in all probability attempt, now that the weather has moderated, this or next week. The 200 ft. level looks well, but nothing very rich. I expect our own teams from Carson with machinery to-day. The boiler setting will be finished on Wednesday, when the mason will come to the mill and overhaul my old furnaces. Sawing has been impossible last week on account of frost; to-day it has been resumed. A good many logs were hauled in on the new, and logging is now good."

GOLD RUN.—J. A. Stone, Jan. 18: My last letter to you was on the 11th inst., since which the washing has progressed very satisfactorily. The extreme cold weather has reduced the water supply to one day's washing, but the weather has again moderated, and I am washing steadily. If the weather remains pleasant I shall make a partial clean up about the 25th. The Miners' Ditch Company intend to make a long run, and wear their blocks half out before they clean up, and I have determined to make a partial clean up now, and a thorough one when they do, provided they run as long as they expect to. It is estimated that I have washed fully double the number of cubic yards they have. At any rate, I venture to say I have washed more gravel than ever has been washed on the same space while opening on this vicinity. I am very highly gratified with the progress I am making. Although I may not be able to open to make large clean ups, still I can positively assure you the future of our property is very bright.

BIRDSEYE CREEK.—G. S. Powers, Jan. 16: The blast of 500 kegs in Neece and West claim referred to in my last, I am pleased to say, is improving in appearance as the washing advances. I sent you cost-sheet and statement of December account, the 13th, which I hope you will find quite correct, although I must acknowledge that the result for the month's washing in Neece claim were rather disappointing. But Dog claim will, I hope, be in shape to explode two small blasts in the end of the present month; at present we are piling off the second slope, and using the men in blasting down cuts immediately above the shaft, preparatory to making an opening for powder drifting, and at the same time make use of the water to considerable purpose in piping off the upper strata, all necessary to the safety of opening a body of gravel of this depth. Our water supply holds good, notwithstanding the unusually cold and freezing weather for the past ten days; and as there is at this time some little snow above the line of Birdseye Ditch, I shall not look for very much falling off during the winter and spring months. With the exception of Neece and West blast, everything is progressing quite as well as could be expected. I trust that there may be a very susceptible change for the better soon.

SOUTH AURORA CONSOLIDATED—OLMETHA COPPER COMPANY OF CORBICA.—H. Cocks, Jan. 27: No. 1 level east, on Fountain lode, is worth 3 tons of mineral per fathom; measure for month, 4,600. No. 3 level, north of No. 1 level, is turning out well in driving, worth 3 tons per fathom; measure for month, 5,500. There is considerable improvement in No. 4 level; the lode is 3 ft. wide, and I worth 2½ tons per fathom; measure, 3,100. Ship Preston loading at Bastia.

DON PEDRO.—Jan. 8: We have created 10 boxes of work from the canon of a moderate quality, which have given about 5500 lbs. The sample when left showed moderate boxwork. We are obliged to stop working this slope again for a time in consequence of the water not having yet drained to the level below. General work throughout the week has been of a fair standard. Water drawn from the mine still amounts to 2100 cubic feet per minute. The surface water is gradually falling off in consequence of the absence of rain; to-morrow if all is well we shall fix and connect the feed-off box in Alice's level. In explorations in mine and at surface there is nothing encouraging to report.

—Jan. 10: The feed-off box in Alice's level was connected yesterday, and is working satisfactorily.

—Telegram from Rio, Feb. 8: "Produce for the month (January) \$2000 oits. Deficiency of water."

ANGUILLA PHOSPHATE.—The directors have received from the superintendent, Capt. Bickford Anthony, dated Anguilla, Jan. 7: "I estimate the cost of extraction at about 2d. per ton f.o.b., but same quarries yield at much less cost per ton—Cartouch Bay last month at about 30s. per ton—the quality being by its appearance about 80 per cent. if not fully, and this month I expect it to give me a good quantity for the hands employed at possibly 1d. per ton. Again, I have No. 3 Flat Capacity for the hands employed at possibly 1d. per ton. I am very pleased to be able to say that, as a whole, our prospects are cheering. I am in hopes that I am on the track of a submarine (new) deposit at Simpson's Bay. I have instructed Mr. McNish to charter a vessel for 250 to 300 tons, to load first at Simpson's Bay and finish here."

BENSBRO.—C. Craze, Feb. 7: The Victoria shaft was sunk 2 ft. last week. There is no change in the ground here, but there is a great deal of water in the shaft. The lode in the 14, west of shaft, of the same value as reported last week, 18s. per fathom; the ground here is not quite so hard. The 14, east of shaft, is in very kindly ground; the lode here produces ¼ ton of ore per fathom. The best stones of ore are coming out of the bottom of the level, which speaks well for the next level.

PONTIGBAUD.—W. H. Rickard, Feb. 1: Roure: We have resumed the sinking of the engine-shaft below the 125, in hard, jointy rock. The 80 metre level south is in a kindly lode, 3 ft. wide, worth ¼ ton of ore per current metre. The same level north yields stones of ore. We are leaving a part of the lode standing on either side, which will yield saving work. The 60 metre level north is in a regular lode, composed of quartz and barytes, spotted with ore. The lode in the 40 metre level north, where being undercut, yields ¼ ton of ore per metre. The rise in the back of this level yields ¼ ton. The 20 metre level, south of Mill shaft, is in soft disordered ground, and the lode poor. The lode in the winze behind this end yields a little low-quality saving work. The add level north, on Virginie's lode, yields ¼ ton of ore per metre. The tribute pitches in back and bottom of the 100 metre level will be worked out in about a week, when we shall clear out the ore and material and draw away the pump. Much: The rise in the back of the add is holed to the surface, effecting a thorough ventilation. La Brouse: The 140 metre level, south of Bassett's shaft, yields some good ore, worth ¼ ton per current metre. The lode in the 120 metre level south yields ¼ ton of ore per current metre. The 100 metre level south yields a little saving work; the lode where being undercut at two points behind this end yields 1 ton of ore per current metre. The 80 metre level south is in soft, poor ground; we have set a cross-cut behind this end to prove the ground eastward, where we think a part of the lode remains untouched at this point. The lode in the 60 south is composed of bands of felsparitic rock and veins of fluorine, both unproductive for lead ore. Pranal: The cutting of the pit in the 90 metre level, at St. George's shaft, for gas-pipes and pitwork, goes on slowly, the rock being very hard and wet. The 90 metre level south yields ¼ ton of ore per current metre, and the same level north ¼ ton. The 70 north yields stones of lead ore and blende, and lets out much gas. The same level south is unproductive. The 50 north, on cross vein, is suspended. The 50 south yields saving work, and presents a kindly appearance for improvement. Our surface operations have been much retarded by bad weather. The samplings have amounted to 24 tons.

PELARENA UNITED.—T. Roberts, Feb. 5: District Val Toppa: The third cross cut westward, in Zero level, was driven in January 1 m. 75 c., and is set to six men for the present month at 105 frs. per metre. The end of the intermediate level below zero, on the western part of the quartz lode, advanced 1 m. 65 c.; set to five men for February, at 145 frs. per metre. Lode producing 10 tons of ore per fathom, worth on an average about 15 dwts. of gold per ton. A picked sample from this end gave, as per trial by the small mill, over 2 ozs. per ton. Stopes in bottom of this level, north of winze, yield 5 tons per fathom, north dwts. per ton; worked by four men, at 110 frs. per metre. Stopes in back of No. 1 level, south of this lode, behind south end, yield 10 tons per fathom, at 9 dwts. per ton; worked by six men, at 30 fr. per metre. The winze from No. 1 to No. 2 level has been completed, and the great part of the ore being raised in No. 1 and the intermediate level is now brought off through this winze. The drive on this lode in north end of ground, above No. 2 level, advanced in January 2 m. 5 c., and is set to four men for the present month, at 100 frs. per metre; lode producing 4 tons per fathom, worth 8 dwts. of gold per ton. Great Quartz Lode: We have suspended the slope in north end of ground above No. 2, and resumed driving south end north by four men, at 110 frs. per metre of level. Lode 2 metres wide, worth 7 dwts. per ton; and on this lode, in bottom of No. 2, we have resumed the slopes south of winze by three men, at 40 frs. per metre of lode, which is 2 metres wide, worth about 7 dwts. per ton. New Lode: In a rise from the old slope, south of first cross-cut, we have met with a small branch of ore, bidding fair to open out wide. This rise is being put up for the present month at 35 frs. per metre. The drive in south end of ground under No. 2, advanced 2 m. 9 c., and is set to four men for February, at 160 frs. per metre. Lode and branches yielding 9 tons per fathom, worth 5 dwts. per ton. In the end of ground north of winze 2 m. 75 c. were driven. The lode and branches here are disordered by the mountain, now yielding about 4 tons of 7 dwts. ore per fathom, and worked by four men. The stopes in bottom of No. 2 level, on the new lode, south of fourth cross-cut, yield 10 tons of ore per fathom, worth 15 dwts. of gold per ton; worked by four men, at 35 frs. per metre. The branches in eastern side of stopes are not looking so well where opened out on. The end south of fourth cross-cut, on flat lode, and branches east of new lode, was driven in January 1 m. 15 c., and is set to two men, at 115 frs. per metre; lode

producing about 3 tons of 12 dwts. ore per fathom. No. 3 Level: During the past month we have driven the first cross cut westward 1 m. 45 c., and have set it for February to two men, at 70 frs. per metre. The end of this cross cut continues to be in brassy stuff. The end southward in this level, on the great quartz lode, advanced 2 m. 5 c., and is now being driven at 100 frs. per metre, by four men, the lode yielding stones of ore. District of Peatona: During the past month the undermentioned work has been accomplished: The 55 end north (Peghiera) driven 9 m. 20 c., lode small and unproductive at present; price given to six men for the present month, 60 frs. per metre. The 33 end north driven 4 m. 55 c., lode about 1 ft. wide; price given to four men for February, 60 frs. per metre. The 33 cross-cut westward, towards No. 2 lode, was driven 2 m. 90 c. Ground more spare for driving; set to four men for February, at 105 frs. per metre. The incline shaft was cut down 2 m. 80 c., and sunk in new ground 1 m. 50 c. Lode at present 1 m. 50 c. wide, composed of quartz and pyrites, in which there is a leader of pyrites 40 c. wide, worth, as per trial made with five small mills, 2 ozs. 11 dwts. of gold per ton of ore. This lode has an improving appearance, and we are in hopes it will prove so in sinking on the same. The pumps and rolls between the 70 level and bottom of shaft are in their places and working satisfactorily. Acquavite Mine: In the 55 end south we are cross cutting westward to reach a part of the lode that took off in that side, by six men, at 95 frs. per metre. Surface: The mill-house roof is finished, and we are now completing what is required to the six mills and crusher-house, with a view to be ready as soon as the ice breaks up, when the water in the Anza will increase, and six mills will be started amalgamating. No time will be lost in the erection of the six additional mills. Great progress is being made in bringing the timber, and we hope in the course of 10 days it will all be at the mine, after which the carriage of mill beds will be commenced.

MENZENBERG.—K. R. Roskilly, Feb. 7: I have much pleasure in informing you that in taking down the lode in the 45, driving north of cross-cut, I broke to-day some beautiful native copper, the like of which I have not seen since I have been here, or connected with this mine. I have put the men to cut into the lode further east, which so far as seen has a splendid appearance. I hope, therefore, by to-morrow to report more fully upon the same. Judging from its character, however, at this point, and its producing native copper, it is evident that depth only is required to open up a valuable property; and I have no doubt whatever, when deeper levels are attained, but what a rich mine will be found.

—R. K. Roskilly, Feb. 9: Dickins's Engine-shaft: The rock in this shaft, sinking below the 45, which is composed of a very fine killas, continues equally as congenial as for some time past; and the shaft is now 3 fms. 1 ft. below the level. In the 45, north of cross-cut, we are busily engaged in cutting into the lode, which so far cut into has much improved in appearance and character. It is composed of quartz, mudiie, spots of yellow copper ore, and fine native copper, a very promising masterly looking lode, the nature of which induces us to believe that the main part is still standing to the east of the level. The lode in the 45, driving south of ditto, is 5 ft. wide, consisting of spar and spots of copper ore intermixed; a kindly lode, which from its present appearance promises an improvement. We have no other change worthy of notice throughout the mine, and our machinery is in good condition, and working well.

LINARES.—Jan. 28: Pozo Ancho: The 100, east of Warner's engine-shaft, continue to open up tribute ground, worth 1 ton of lead ore per fathom. The lode in the same level west is improving, and also yields 1 ton per fathom. The lode in the 85 west of Crosby's is larger and more open than it was, but without ore. The 65 and 55 ends, west of Peit's engine-shaft, are unproductive. The lode in the 90, west of San Francisco's shaft, is small and poor. The same level east is in a very regular lode, producing stones of ore, and worth ½ ton per fathom. The 75 east of this shaft, is in a promising lode, worth 1 ton per fathom. The 65, east of the same shaft, also produces 1 ton per fathom. Peit's engine-shaft will reach the required depth for the 105 by the end of the month. The lode in No. 205 winze has improved a little, and yields at present 1 ton per fathom. Quintones Mine: The 90, west of Taylor's engine-shaft, is in very hard granite. The lode in the 50, west of this shaft, is disarranged and poor, the end being in contact with the cross-course. In the 45, east and west of Cox's shaft, the lode is small and poor. The 81, east of Taylor's engine-shaft, is in a very strong lode, yielding stones of ore. The 65, east of Addis's shaft, is in hard ground, and the lode poor. The lode in the 55, east of this shaft, is very much improved, and yields 1 ton per fathom. The 85, west of Henty's shaft, is in hard, poor ground. The 65, west of San Carlos's shaft, is moderately easy for driving, but entirely without ore. The 80, west of this shaft, is in a powerful lode, containing a little ore. In the same level, east, the lode is improving, and yields good stones of lead ore. In the 65, east of San Carlos's lode, the lode has fallen off a little during the past week, producing at present 1 ton per fathom. The 45, east of Judd's shaft, is in a very regular lode, containing a little ore. The 32 cross-cut, north of Judd's, is in hard ground. The ground in Cruz's winze, below the 85, is hard, and the lode of no value. The lode in Coarua's winze, below the 45, is small, producing stones of ore, worth ½ ton per fathom.

LANESTONA.—Jan. 37: The progress in cutting the 130 metre pit is slow, the ground being hard. In the 100 metre level south the vein driven on has increased to 3 ft. wide, chiefly calcite, with a small leader of lead and calamine; there is no doubt as to this being the lode. The ventilation winze, below the 100 south, is in a large lode, but without ore; work is impeded by infiltration of water from the level above. The 80 south has just intersected the counter lode, which appears to cut off the main lode southwards. The cross-cut west from the 80 south is crossing through parallel divisions to counter lode, which facilitates the driving a little. In the slope in the bottom of the 60 south the ore ground is again shortening, but slightly improved in yield, giving 1½ ton of lead and ¼ ton of calamine per fm. The slope in the back of the 60 metre level north has holed to a cave, which continues over the back of the level, and shows the ore to be locally a thin floor. The slope in bottom of the 60 north is producing loose stones of calamine in a mass of mud and clay resting on the dolomite; value ¼ ton of calamine per fathom. The add north counter lode has been passing through more mineralised ground, and stones from the lode frequently showing a mixture of calamine. The snow has disappeared, and surface work has been resumed. It is expected to return 8 tons of lead and 6 tons of calamine.

PORTUNA.—Jan. 26: Canada Inco: In the 110, west of Judd's shaft, the lode is larger than it has been, and yields ¼ ton of lead ore per fathom. There is no change to report in the 30, east of San Carlos's shaft, poor. In the 45, west of Abercrombie's shaft, there is a good lode, yielding 1 ton per fathom. The 60, west of San Pedro's, is hard and poor. The 60, east of San Francisco's, is in a strong lode, producing ¾ ton per fathom. The 50 and 40, east of this shaft, are without any ore of value. The lode in the 110, east of Addis's shaft, has fallen off a little in value, yielding ¼ ton per fathom. The 50, east of this shaft, is in a well defined lode, producing 1 ton per fathom. The 50, west of Kennedy's shaft, is in a small

lode, and the ground is hard. The 90, west of this shaft, is in a large lode, with good spots of lead. The 90, east of Caro's shaft, is in a large and very promising lode, worth 1 ton per fathom. In the 80, east of this shaft, the lode has decreased in value, producing at present 1 ton per fathom. In San Pedro's shaft, the lode below the 60 fathom level, fair progress is being made. Rancho's winze will be holed to the 40 in a day or two; the lode yields 1½ ton per fathom. In Enrique's winze below the 80 the lode maintains its size and value, which is 2½ tons per fm. Los Salinos Mine: The lode in the 120, west of Buenos Amigo's engine shaft, has fallen in value since last report, yielding now ½ ton per fathom. The lode in the 110, west of San Carlos's shaft, is small, and the granite hard. The 130 ends, east and west of Morris's engine-shaft, continue in poor ground. The lode in the 110, east of this shaft, is small and unproductive. The lode in the 110, east of San Pablo's, has diminished in value, but still produces 2 tons per fathom. The 100, east of San Miguel's shaft, is in hard ground, and the lode small and poor. In the 25 cross cut south no lode has yet been met with, and the ground is poor. The 35, west of Swaffield's shaft, is in a rather small lode, yielding ¼ ton per fm. The ground is hard. The lode in the 45, west of Swaffield's, has improved to 2 tons per fathom. In the 55, west of Palgrave's engine-shaft, the lode contains a little lead, but not sufficient to value. The men have resumed driving the 65, east and west of this shaft, the water being out; the lode yields 1 ton per fathom. In the eastern end, and ¾ ton in the western end. In the 55, east of Palgrave's, the lode has improved, and yields 1 ton per fathom; the ground is also easier for driving. In the 25, east of Peit's engine-shaft, the lode is large and open, containing a little lead and gossan, but nothing to value. The lode in the same level west has fallen off in value during the past few days. In the Buenos Amigo engine-shaft sinking below the 120, the ground is hard, and slow progress is being made. The men in Cox's shaft, below the 100, are making good progress in sinking. Castro's winze, below the 45, is troublesome for sinking, the ground being hard; the lode produces ½ ton per fathom.

ALAMILLOS.—Jan. 26: The lode in the 40, west of San Felipe shaft, has a promising appearance. The 50, east of La Magdalena shaft, is in a small, regular lode, worth ¼ ton per fathom. The 85, east of Taylor's engine shaft, has commenced with San Enrique shaft. The 85, west of San Adriano's, is in a large lode, producing stones of ore. The lode in the 50, east of San Victor's engine shaft, has improved, and yields ½ ton per fathom. The lode in the 40, east of this shaft, the lode is small, but not sufficient to value. The lode in the 40, west of San Carlos, continues small and poor. In the 30, east of this shaft, the lode yields ¼ ton per fm. In the 40, east of this shaft, the lode is small, but when last reported on, and produces 1 ton per fathom. The lode in the 40, east of Crosby's shaft, is disturbed by a small cross-course. The 40, east of Adis's shaft, is passing through profitable ground, yielding ¼ ton per fathom. In the 55, east of Judd's engine-shaft, the lode has slightly improved, but does not contain sufficient lead to value. The sinking of Marto's winze below the 50, is producing good stones of ore, worth ½ ton per fathom. The 70 cross-cut, north of Judd's, continues in hard granite. The lode in the 50 fm. level, west of Judd's cross-cut, is small and poor. There is nothing of value in the 30, west of Swaffield's shaft. Pair progress is being made at Taylor's engine-shaft, below the 85. The ground in Abercrombie's shaft is favourable for sinking. The sinking of Cox's shaft below the 50 is being pressed on as fast as possible. Martinez winze, below the 35, is poor, and the granite hard for sinking. The lode in Juan's winze, below the 35, contains no lead to value. The sinking of Marto's winze below the 50 is resumed; the lode is ugly, containing a little lead. Davey's winze has been commenced with the 50. Lesano's winze is being sunk below the 51; to the east of San Tago the lode produces stones of lead. In Reza's winze, below the 25, the lode maintains its value—1½ ton per fathom. The lode in Figueroa's winze, below the 30, has fallen off a little in value, yielding at present ½ ton per fathom.

[For remainder of Foreign Mines, see to-day's Journal.]

—Under this title Messrs. Cassell, Patter, and Galpin have just issued the first part of what certainly promises to be one of the most elegant drawing-room books yet published. The intention of the work is to present a complete description and elaborate pictorial illustration of the greater part of the European continent, by bringing together representations of the most beautiful objects of nature and art which make Europe so strikingly picturesque. Nothing that is worthy of portrayal by pen and pencil, whether of account of natural beauty, historical associations, or architectural interest, will be neglected; and on the one hand, mountain ranges, lakes, valleys, forests, waterfalls, rivers; and on the other, temples, cathedrals, churches, palaces, castles, towers, and ruins will be brought under the eye of the reader by descriptive and pictorial work. The volume commences with a beautiful steel plate of Windsor Castle, and the part likewise contains a large number of wood engravings of exquisite finish, representing different scenes about Windsor, the first being a picture painted expressly for the book by Miss Foster, and the others from recent studies sketched by the artist. The Thames valley from the Round Tower, the Claines, the Slopes, and William the Conqueror's Oak, now rapidly decaying, are all of admirable pictures; whilst the accompanying letterpress greatly adds to the interest when examining them. It would seem that the work will be completed for 100, 10s. to 12s. 12s.; and there are doubtless many who would derive much greater pleasure from it than from a single Continental tour which would cost the same amount. The book is, without doubt, worthy of the highest praise that can be bestowed upon it.

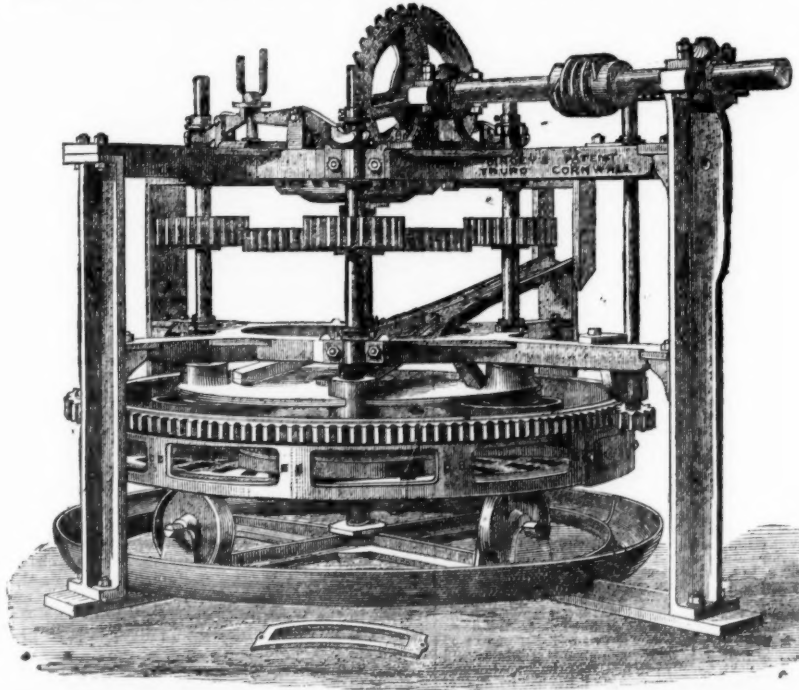
STEAM SUPERHEATERS.—Mr. W. L. POWELLSON, of San Francisco, constructs his superheater with an outside case, with division partitions, an inner fitted supply and tempering or equalising pipe, and a discharge pipe for superheated steam. The steam passing in is conveyed through the whole of the steam chamber around the partition B and C, and back through the lower part of the partitions to the first division, where it is discharged into the chamber, and passes around the partitions until it reaches the discharge pipe leading to the boiler furnace.

MANUFACTURE OF CUT NAILS.—The invention of Mr. W. S. HETTON, of Leeds, has for its object the application to nail cutting machines (which cut nails from narrow strips of metal commonly called "screeds") of an automatic feeding apparatus which draws back the strip of metal, or "screed," to clear the moving cutter, turns the screed over after each cut, and moves it forward under the cutter the proper distance to form a nail.

DINGEY'S PATENT PULVERISER.

First Silver Medal, Royal Cornwall Polytechnic Society, awarded 1870.

Special Premium of £20, offered conjointly by the Editor of "Mining Journal" and the Royal Cornwall Polytechnic Society for the Best Invention for Dressing Ores, awarded 1872.



This Machine is specially adapted for GRINDING TIN ROWS, LEAD SKIMPINGS, GOLD and SILVER ORES, &c. LOW-CLASS MINERAL ORES can be treated by this Machine that would not pay by any other treatment. This Pulveriser is working at Carn Brea, Tincroft, Wheal Jane, Frank Mills (Lead), and various other Mines.

TESTIMONIALS.

From Capt. WM. TEAGUE, Jan. 31, 1876, Manager of Tincroft Mines, Redruth. I have used Dingey's Patent Pulveriser for some time, and am pleased to say they answer to my entire satisfaction; it is, therefore, with great pleasure I commend them to any party who may want machines for reducing sand almost to pulp.

From Capt. JOHN NICHOLLS, Frank Mills (Lead) Mine, Christow, near Exeter, Jan. 4, 1876. The Pulveriser answers admirably, and we are satisfied it is the most efficient Machine extant for treating talcums, &c. Please send on the other two as quickly as possible.

Address, for price, &c.—

FRANCIS DINGEY & SON, Truro Foundry, Truro, Cornwall.

N.B.—MINING MACHINERY OR CASTINGS OF ALL DESCRIPTIONS SUPPLIED.

BLAKE'S PATENT STEAM PUMP.

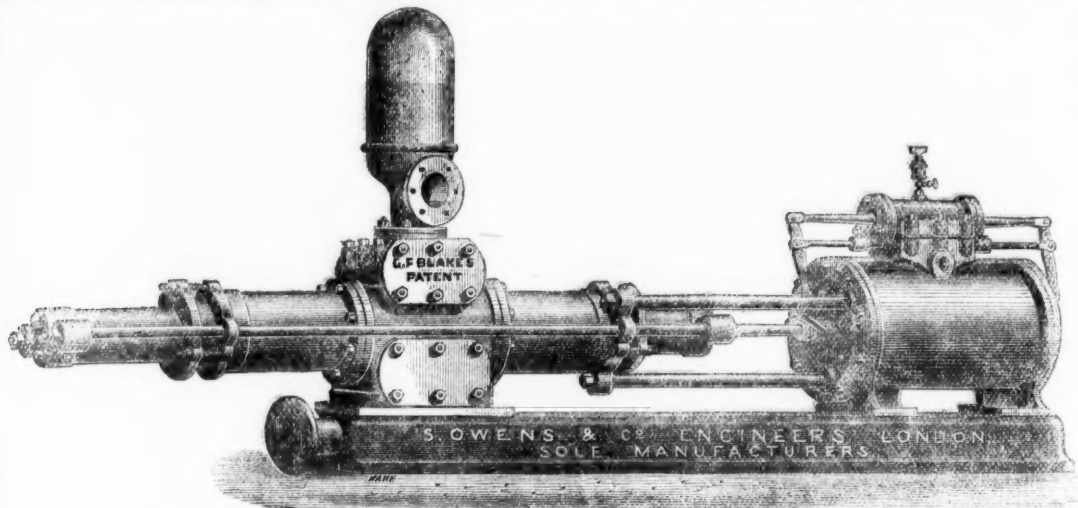
MORE THAN 8000 IN USE.

SOLE MAKERS FOR GREAT BRITAIN,

S. OWENS & CO.,

Hydraulic and General Engineers, Whitefriars-street, London;
And at 195, Buchanan-street, Glasgow (W. HUME, AGENT).

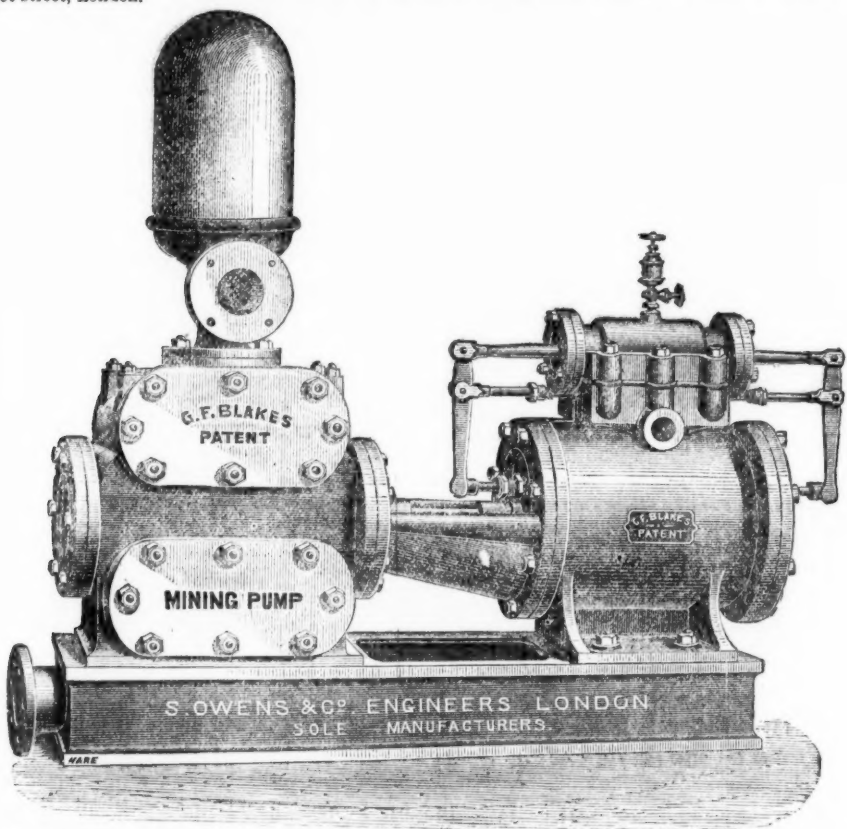
These PUMPS from their SIMPLICITY, RELIABILITY, DURABILITY, and ECONOMY are SPECIALLY SUITED FOR MINING PURPOSES, where large quantities of water require to be raised from great or medium depths with CERTAINTY. They are double-action in their construction, throwing a constant stream of water, can be made of any stroke to suit the space in which they have to work, can be arranged with any combination of steam and water cylinders to suit the pressure and lift against which it is desired to work them, are made of the very best materials and highest class of workmanship, and all working parts can be readily got at by any ordinary workman, and replaced if necessary by a duplicate part (all such being interchangeable) in the shortest possible time. For situations where gritty and sandy water has to be pumped the DOUBLE PLUNGER PATTERN is recommended. Where space is limited the PISTON PUMP is better suited, a novel feature of which is the PATENT REMOVEABLE LINING, which can be removed in a few minutes and substituted with a new one, without disturbing any other part of the pump.



Blake's Improved Double-plunger Steam Pump.

S. OWENS AND CO.,

In placing the BLAKE STEAM PUMP before the mining world, believe they are offering the BEST, MOST RELIABLE, and ECONOMICAL PUMP that has yet been made, and solicit an inspection of various sizes in operation at their works, Whitefriars-street, Fleet-street, London.



Blake's Improved Mining Pump, with Patent Removeable Lining to Pump Cylinder,

Any combination of these Pumps may be had to suit circumstances. The following are some of the SIZES SUITABLE FOR MINING PURPOSES:-

	12	12	12	12	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	24	24
Dia. of steam cylinders, In.	12	12	12	12	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	24	24
Dia. of water cylinders, In.	3	4	5	6	4	5	6	4	5	6	8	4	5	6	8	5	7	8	9	6	8
Length of stroke, In.	18	18	18	24	24	24	24	24	24	24	24	24	30	30	30	30	30	36	36	42	42
No. of strokes per minute.	30	30	30	30	25	25	25	22	22	22	22	22	22	22	22	20	20	17	17	15	15
Quantity in gallons per hour, approximately	1440	2610	4200	5940	2940	4620	6600	2646	4158	5940	10620	2646	5160	7500	13260	4586	9000	12360	15660	6720	120

PRICES FOR THE ABOVE, OR ANY SPECIAL SIZE, AND ILLUSTRATED CATALOGUES FURNISHED ON APPLICATION

PATENT CONDENSORS

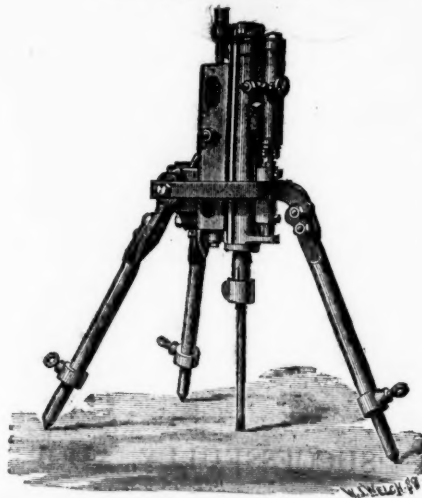
be supplied for any size pump to effect a saving of fully 30 per cent. in the consumption of fuel, greatly increasing their efficiency

The Blake Pump will work under water, and as efficiently with compressed air as with steam.

BLAKE'S DONKEY PUMPS FOR FEEDING BOILERS KEPT IN STOCK.

THE "CHAMPION" ROCK BORER

For Tunnels, Mines, Quarries,
AND OTHER WORKS.



Intending purchasers can satisfy themselves that the advantages claimed for the "CHAMPION" over all other Rock Borers are not over-estimated.

For the amount of work it will do, it is the lightest, most compact, most durable, and cheapest in the market.

IMPROVED AIR COMPRESSORS,
And other MINING MACHINERY.

ULLATHORNE & CO.,
METROPOLITAN BUILDINGS,

63, QUEEN VICTORIA STREET, LONDON, E.C

MINERS

PRICKERS AND STEMMERS

OF
MUNTZ'S METAL.

ACCORDING TO THE NEW MINES REGULATION ACT.
BEST KNOWN MATERIAL.

MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM

SOLID DRAWN BRASS BOILER TUBES

FOR LOCOMOTIVE AND MARINE BOILERS,
EITHER

MUNTZ'S OR GREEN'S PROCESS

MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM.

TO COLLIERY FURNISHERS, &c. &c.

AGENTS WANTED in all Mining Districts for the LANDAU MINERS' LIFE PROTECTING LAMP. For particulars, apply to Messrs. LANDAU, Coal Merchants, and Manufacturers of several important Inventions, 220, HIGH HOLBORN, LONDON, W.C.



STRONGLY RECOMMENDED! HIGHLY APPRECIATED!

THE LANDAU

MINERS' LIFE-PROTECTING LAMP,

The objects attained by the Patent Lamp are:-

- 1.—It is a perfect safeguard against explosion.
- 2.—Great brilliancy of light at a very small expenditure of oil.
- 3.—It is in no way affected by the strongest current of air in the mine.
- 4.—It is impossible for the miner to tamper with it with impunity.
- 5.—All the above improvements can be adapted by Messrs. Landau to any other lamps at present in use.

Excelling
all other
Lamps.

Important testimonials, confirming the above statements, will be forwarded on application by—

MESSRS. LANDAU,
COAL MERCHANTS AND MANUFACTURERS OF SEVERAL IMPORTANT INVENTIONS,
220, HIGH HOLBORN, LONDON W.C.

SEND FOR LISTS, SHOWING EXTRA LARGE DISCOUNTS FOR CASH.

HOWARD RYLAND AND CO.,
MANUFACTURERS,

105 AND 106, NEWHALL STREET, BIRMINGHAM,
CLOTH AND MANILLA CARTRIDGE

DIRECTION LABELS.

SELF INKING ENDORSING STAMPS.

DOOR AND WINDOW PLATES of Brass, Zinc, and of Plate Glass.

Letter Copying Presses, Eveletting Presses, Embossing Presses, Stamps for Election Purposes, Dating Stamps, Key and Umbrella Labels, Wine Merchants and Chemists' Wax Seals, Sealing and Bottling Wax, Glue, Post Boxes for Jewellers and others, Brass Checks for large Works, Concert Halls, Hotel Keepers, &c., Brass Labels for Patentees, Gummed Tickets for Drapers, Gummed Labels, &c., Printing, Letter Cutting, Die Sinking, Engraving, Wood Engraving, Stereo typing, Bookbinding, executed at exceedingly low prices.

Birmingham Goods of every description supplied at low prices for cash only.
Endorsing Inks supplied, Old Stamps repaired, Door and Window Plates re-engraved, and made as new.

SPECIAL NOTICE.

H. R. and Co. are now supplying DIRECTION LABELS, subject to 25 per cent. discount off List Prices.

ENDORSING STAMPS, No. 3, at 3s. 9d. each, and ENGRAVING at 1s. 3d. per dozen letters; usual price, 7s. 6d.; and ENGRAVING 2s. 6d. per dozen letters.

FLEXIBLE PRINTING STAMPS at less than half the List Price. Key and Umbrella Labels at 6d. each, engraved.

DOOR AND WINDOW PLATES, at very low prices.

AGENTS WANTED.

LA HOUILLE (Weekly Journal) represents the IRON and COAL TRADES of FRANCE. Advertisements referring thereto, and subscriptions, 20s. per annum, post paid, received by the London Agents, HOWARD RYLAND AND CO., 40, FINSBURY CIRCUIT, E.C.



PARIS EXHIBITION, 1867.



VIENNA EXHIBITION, 1873.



LONDON EXHIBITION, 1874.



CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

TANGYE BROTHERS AND HOLMAN,

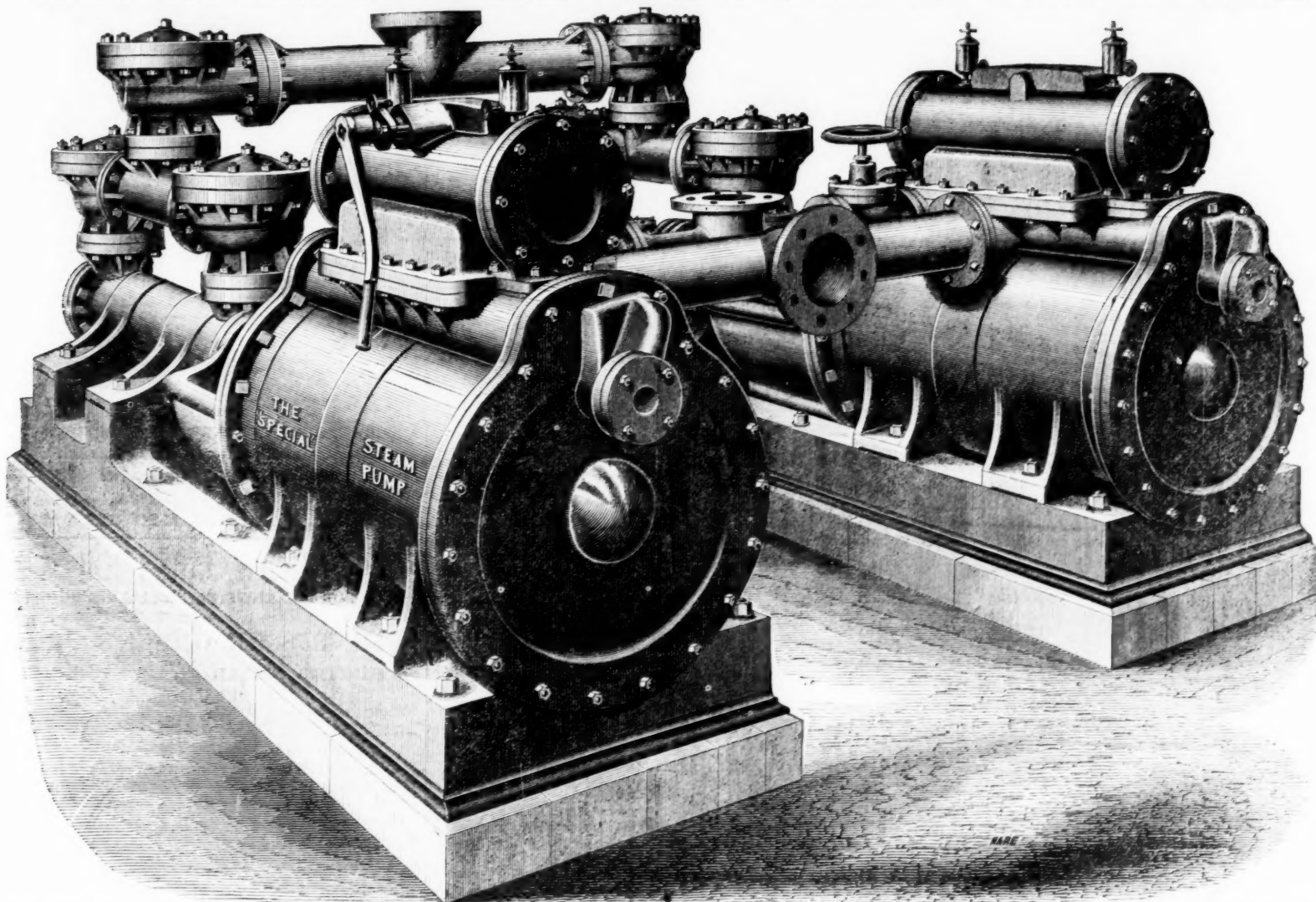
10, LAURENCE POUNTNEY LANE, LONDON, E.C.,

AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

THE "SPECIAL" DIRECT-ACTING STEAM PUMP.

OVER 12,000 IN USE IN ENGLAND AND AMERICA.

SUCCESSFULLY ADOPTED IN A LARGE NUMBER OF MINES IN THIS COUNTRY AND ABROAD.



PAIR OF THE "SPECIAL" DIRECT-ACTING STEAM PUMPS SUITABLE FOR HIGH LIFTS IN MINES, SIMILAR TO MANY SUPPLIED BY TANGYE BROTHERS AND HOLMAN.

The following extracts from a letter, received by Tangye Brothers and Holman, from J. Bigland, Esq., dated Feb. 25, 1875, refers to a "Special" Direct-acting Steam Pumping Engine supplied four years ago to Messrs. Joseph Pease and Partners, for the Adelaide Colliery, Bishop Auckland. The engine is throwing about 8000 gallons per hour, 1040 feet high, in one direct lift:-

"The underground pumping engine at Adelaide Colliery is working night and day. It does its work satisfactorily, and gives us very little trouble. Some of the cup leathers which form the plunger packing have worked three months. The working barrel is in beautiful condition. The average duration of the valve seats is about eight months; they work and keep tight as long as there is a bit of them left. I expect the valves (Holman's patent) and the buffers will last as long as the colliery."

Extract from a letter received by Tangye Brothers and Holman from W. H. Eagland, Esq., dated Feb. 27, 1875, in reference to a "Special" Direct-acting Steam Pumping Engine supplied two years ago to the West Yorkshire Iron and Coal Company near Leeds, to throw 16,000 gallons per hour, 465 feet high in one direct lift:-

"It is at work night and day. Our man goes down to the pump twice a day Ten A.M. and Four P.M., to supply the tallows cups. After this it is left every day till he comes next morning, when he goes down again at Ten A.M. as before. The only repairs the pump has had for 12 months are one bucket, which had worked since we got the pump, and one valve seat, but no valve, so it has cost very little. Its first lift is 70 yards perpendicular, then the water passes up pipes for half a mile, ascending another 70 yards, and then another perpendicular pipe of 15 yards - total, 155 yards vertical height."

Extract from the Official Report of the Commission of the Government of the Empire on the Vienna Exhibition of the 1873, treating on Pumps and Engines:-

"Contrary to these older pumping engines exhibited, there is now nearly everywhere the opinion established that the 'SPECIAL' pumping engines, made in England, which are made on A. S. Cameron's principle by Messrs. Tangye, are preferable to all. They do much duty combined with great economy. They dispense entirely with the troublesome rod arrangement, giving often rise to ages, so that they will be applied shortly to a great extent, and are already in many localities. There is no doubt that this is in every respect practice will command a general adaptation."

200 SIZES AND COMBINATIONS OF THESE PUMPS ARE NOW MADE.

The following are a few of the Sizes for High Lifts in Mines:-

Diameter of Steam Cylinder	7	8	9	9	10	10	12	12	12	14	14	14	16	16	16	16	18	18	18	18	21	21
Ditto of Water Cylinder	3	3	3	4	3	4	3	4	5	4	5	6	4	5	6	7	5	6	7	8	5	6
Length of stroke	24	24	24	24	36	24	36	36	36	36	36	36	36	36	36	36	48	36	36	36	48	48
Gallons per hour approximate	1830	1830	1830	3250	1830	3250	1830	3250	5070	3250	5070	7330	3250	5070	7330	9750	5070	7330	9750	13,000	5070	7330
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump	325	425	540	300	665	375	990	540	345	735	470	330	960	615	426	312	775	540	400	300	1058	740

CONTINUED.

Diameter of Steam Cylinder	21	21	21	24	24	24	24	24	26	26	26	26	30	30	30	30	30	32	32	32	32	36
Ditto of Water Cylinder	8	9	10	6	7	8	9	10	7	8	9	10	12	8	9	10	12	8	9	10	12	12
Length of stroke	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	9750	13,000	16,519	20,000	30,000	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump	413	326	264	960	700	540	427	345	827	633	500	405	282	540	665	540	375	275	960	758	625	426

PRICES OF THE ABOVE ON APPLICATION.—FOR SIZES AND PRICES OF PUMPS FOR LOWER LIFTS SEE SEPARATE LIST.

HOLMAN'S PATENT CONDENSER will be found a great acquisition to all kinds of Steam Pumps, as not only is the exhaust steam completely condensed, and the annoyance from blowing off entirely got rid of, but a vacuum is obtained in the steam cylinder saving from 20 to 50 per cent. in fuel, and increasing to a considerable extent the economy and efficiency of the Pump.

NORTH OF ENGLAND HOUSE
SOUTH WALES HOUSE...

TANGYE BROTHERS AND RAKE, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.
TANGYE BROTHERS AND STEEL, Tradeagar Place, NEWPORT, Mon.; and Oxford Buildings, SWANSEA.

PATENT IMPROVED ORE WASHING & DRESSING MACHINES.

THE SANDYCROFT FOUNDRY & ENGINE WORKS CO. (LIMITED), NEAR CHESTER

LATE THE MOLD FOUNDRY CO. (ESTABLISHED 1833).

SOLE MAKERS IN GREAT BRITAIN.

HUNDREDS IN USE.

FULL PARTICULARS,
PHOTOGRAPHS, TESTIMONIALS, AND PRICES,
UPON APPLICATION.

Will supply Designs, and all the necessary Plant for laying out
Dressing Floors; also

MANUFACTURERS OF EVERY VARIETY OF

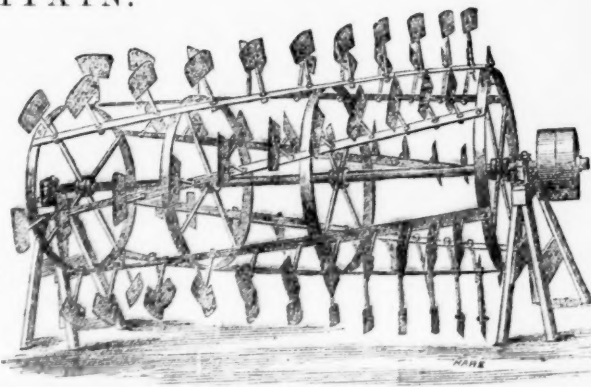
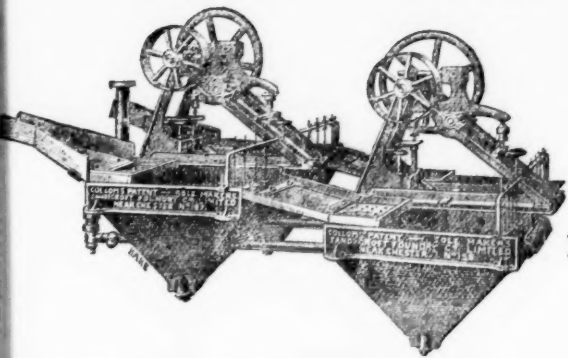
MINING MACHINERY.

PUMPING & WINDING ENGINES,

PITWORK, CRUSHING MILLS,

ROLLS

OF PECULIARLY HARD AND TOUGH MIXTURE,
&c., &c.



COLLON'S PATENT AUTOMATIC ORE WASHING MACHINE, working at the following and many other Lead, Copper, Blende, and Tin Mines:—Great L. Key, C. pe Copper, Pontgibaud, Linares, Alamillos, West Tolgus, Lisburne, Minera Halvans, Snailbeach, &c.; and also at Messrs. Vivian and Sons' Works, Swansea.

PATENT IMPELLER, OR KNIFE BUDDLE, in use at the following and many other Lead, Copper, Blende, and Tin Mines:—The Van, Roman Gravel, Tankerville, Ladywell, Lisburne, East Black Craig, Old Treburgett, Penhale & Barton, Bog, Linares, Fortuna, Alamillos, Minera Halvans &c.

LONDON OFFICE: 6, QUEEN STREET PLACE, E.C.

The ONLY PRIZE awarded for "FUEL ECONOMISERS" at the Vienna, Paris, and Moscow Exhibitions, was given to

GREEN'S PATENT FUEL ECONOMISER.

AN INDISPENSABLE APPENDAGE TO STEAM BOILERS.



MOSCOW, 1872.

In operation to
upwards of
2,550,000 h.p.



VIENNA, 1873.

SAVES

20 to 25 per cent.
of Fuel.

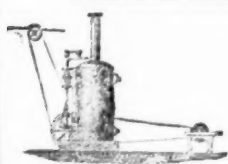


PARIS, 1867.

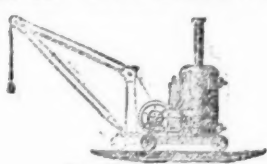
EDWARD GREEN AND SON, Engineers and Sole Makers, 14, St. Ann's-square, Manchester.

ALSO LONDON, GLASGOW, DUSSELDORF, &c.—WORKS: WAKEFIELD.

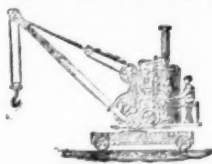
CHAPLIN'S PATENT PORTABLE STEAM ENGINES & BOILERS.



STATIONARY ENGINE.
No building required.



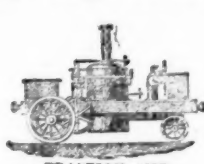
HOISTING ENGINE.
With or without Jib.



STEAM CRANE.
For Wharf or Rail.



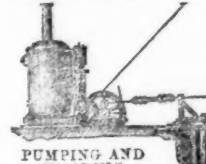
CONTRACTOR'S
LOCOMOTIVE.



TRACTION AND
ROADWAY ENGINE.



SHIP'S ENGINE
AND DISTILLER.



PUMPING AND
WINDING
ENGINE.

The ORIGINAL combined Vertical Engines and Boilers, introduced by Mr. CHAPLIN in 1855, specially designed and adapted for

Pumping, Winding, Hoisting, Sawing, Driving Machinery, and for General Contractors' Work, Railway Sidings, Coal Mines, Quarries, Gas Works, &c.

WIMSHURST, HOLICK, & CO., ENGINEERS, 34, WALBROOK, LONDON, E.C.

WORKS:—REGENT'S CANAL DOCK, 602, COMMERCIAL ROAD EAST, LONDON, E. (Near Stepney Station).

Parties are cautioned against using or purchasing Imitations or Infringements of these Patent Manufactures.

FERROUX'S ROCK DRILL,

FOR

TUNNELS, MINES, QUARRIES, AND SHAFTS.

Forty-two Machines employed at the St. Gothard Tunnel, Switzerland, and Forty at the Cochem Tunnel, Prussia. These Machines are the only ones employed at the heading of Goeschenen, north side of the St. Gothard Tunnel, traversing the hardest granite.

They are also applicable to the galleries of mines, for which a special machine has been designed.

Apply for further particulars to—

B. ROY AND CO.,
VEVEY, SWITZERLAND,

Patentees in all Countries for the Ferroux's Rock Drill,

OR TO

HAMILTON W. PENDRED

22, LEADENHALL STREET, LONDON, E.C.

A MACHINE MAY NOW BE SEEN AT WORK IN LONDON

Coal-Getting by Patent Hand-Worked Machinery, WITHOUT THE USE OF GUNPOWDER.

- No. 1 MACHINE - THE HAND COAL-CUTTER, for under-cutting.
2 " - THE ROCK & COAL PERFORATOR, for drilling.
3 " - THE SCREW WEDGE, for breaking down.

The use of these Machines, while doing away with the greatest source of danger, economises at least fifty per cent. of the labour required in Getting Coal.

Particulars on application to—

MARTIN MACDERMOTT,
SCOTT'S CHAMBERS, PUDDING LANE, LONDON, E.C.



MINERS' LAMP

AND
GAUZE MANUFACTORY,

Established Half-a-century.

JOSH. COOKE AND CO.

SAFETY LAMPS

MADE TO DRAWING, DESCRIPTION, or MODEL. Illustrated.

Price Lists free, by post or otherwise.

VALUABLE TESTIMONIALS FROM EMINENT FIRMS.

MIDLAND DAVY LAMP WORKS,

BELMONT PASSAGE, LAWLEY STREET,

BIRMINGHAM.

Specimens may be seen at the PHILADELPHIA EXHIBITION.

THE PHOSPHOR BRONZE COMPANY (LIMITED).

OFFICES:

139, CANNON STREET, E.C.

FOUNDRY:

115, BLACKFRIARS ROAD, S.E.

INGOTS, Nos. I or II, suitable for Pumps, Pinions, Ornamental Castings, &c. £130 per ton
Nos. VI. or VII., suitable for Valves, Plungers, Bushes and Bearings, Fans, &c. £145 per ton
Special Phosphor Bronze Bearing Metal £120 per ton
CASTINGS, Wire Ropes, Tuyeres, &c., of all descriptions executed at the shortest notice.

THE GREAT ADVERTISING MEDIUM FOR WALES.

THE SOUTH WALES EVENING TELEGRAM

(DAILY), and
SOUTH WALES GAZETTE

(WEEKLY), established 1857,

the largest and most widely circulated papers in Monmouthshire and South Wales

CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the second edition at Five P.M. On Friday, the "Telegram" is combined with the "South Wales Weekly Gazette," and advertisements ordered for not less than six consecutive insertions will be inserted at a uniform charge in both papers. P.O.O. and cheques payable to Henry Russell Evans, 14, Commercial-street Newport, Monmouthshire.

Ore Crushers, with H.R.M.'s New Patent Crushing Jaws,

EXTENSIVELY USED BY
MINE OWNERS, &c.

OVER 1150 NOW IN USE.

New Raff Wheel Machine, fitted with H.R.M.'s Special Jaws for Crushing Stone, &c. to
Fine Powder.

H.R. MARSDEN, LEEDS,

PATENTEE, AND ONLY MAKER IN THE
UNITED KINGDOM.

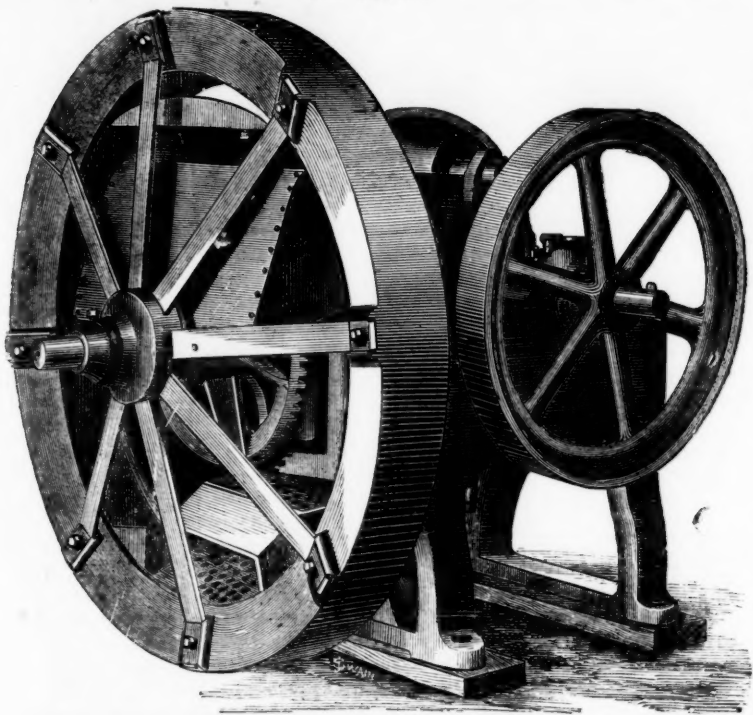
Intending Buyers are cautioned against purchasing any infringe-
ments of H. R. M.'s numerous Patents.

Great Improvements in Mining Machinery by the use of

H. R. M.'s

NEW RAFF-WHEEL MACHINE

WITH NEW PATENT CRUSHING JAWS,
BY WHICH ORES OF EVERY DESCRIPTION CAN
REDUCED TO FINE POWDER.

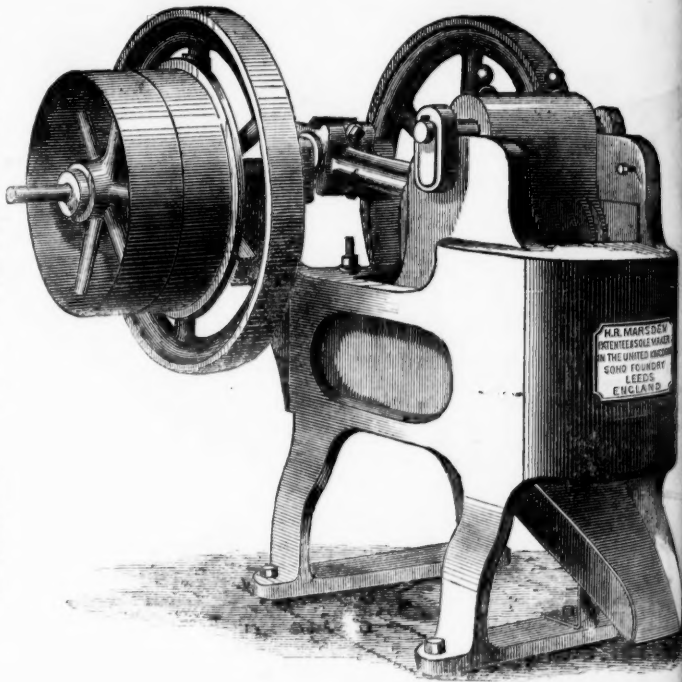


FIFTY GOLD AND
SILVER FIRST CLASS
PRIZE MEDALS, in-
cluding the R. A. S.'s
SILVER MEDAL, have
been received in com-
petition with other
Stone Breakers.

Machines fitted with
H. R. M.'s renowned
PATENT CUBING
JAWS, by which stone
is broken equal to hand
at ONE-TENTH THE
COST.

FEW WORKING
PARTS.
SMALL WEAR and
TEAR.
SIMPLICITY OF
CONSTRUCTION, &c.

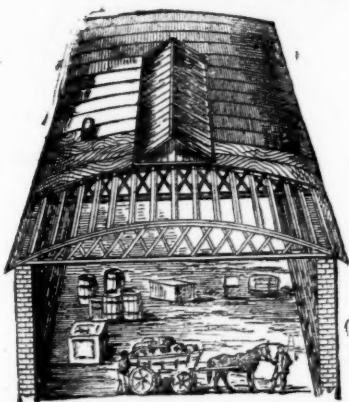
THE ONLY ORE
CRUSHERS WHICH
COMBINE AND EM-
BRACE THE TRUE
PRINCIPLES OF AC-
TION AND CON-
STRUCTION FOR THE
PURPOSE
DESIGNED.



For Catalogues, Testimonials, &c., apply to—

H. R. MARSDEN, Patentee & Sole Maker, SOHO FOUNDRY, LEEDS, ENGLAND

M'TEAR AND CO.'S CIRCULAR FELT ROOFING,



FOR
GREAT ECONOMY
AND
CLEAR WIDE SPACE.

For particulars, estimates,
and plans, address,—

M'TEAR & CO.,
ST. BENET CHAMBERS,
FENCHURCH STREET,
LONDON, E.C.;
4, PORTLAND STREET,
MANCHESTER;
OR
CORPORATION STREET,
BELFAST.

The above drawing shows the construction of this cheap and handsome roof, now
much used for covering factories, stores, sheds farm buildings, &c., the principal
of which are double bow and string girders of best pine timber, sheathed with 1/2 in.
boards, supported on the girders by purlins running longitudinally, the whole
being covered with patent waterproof roofing felt. These roofs so combine light-
ness with strength that they can be constructed up to 100 ft. span without centre
supports, thus not only affording a clear wide space, but effecting a great saving
both in the cost of roof and uprights.

They can be made with or without top-lights, ventilators, &c. Felt roofs of any
description executed in accordance with plans. Prices for plain roofs from 30s. to
80s. per square, according to span, size, and situation.

Manufacturers of PATENT FELTED SHEATHING, for covering ships' bot-
toms under copper or zinc.

INODOROUS FELT for lining damp walls and under floor cloths.

DRY HAIR FELT, for deadening sound and for covering steam pip. thereby
saving 25 per cent. in fuel by preventing the radiation of heat.

PATENT ASPHALTE ROOFING FELT, price 1d. per square foot.

Wholesale buyers and exporters allowed liberal discounts.

PATENT ROOFING VARNISH, in boxes from 3 gallons to any quantity re-
quired 8d. per gallon.

DUNN'S ROCK DRILL,

AND
AIR COMPRESSORS.

DRIVING BED ROCK
TUNNELS, SINKING
SHAFTS, AND PERFORMING
OPEN FIELD OPERATIONS,

IS THE
CHEAPEST, SIMPLEST,
STRONGEST, & MOST EFFECTIVE
DRILL IN THE WORLD.

OFFICE,—193, GOSWELL ROAD
(W. W. DUNN AND CO.,
LONDON, E.C.



By a special method of preparation, this leather is made solid, perfectly close in
texture, and impermeable to water; it has, therefore, all the qualifications essen-
tial for pump buckets, and is the most durable material of which they can be made.
It may be had of all dealers in leather, and of—

I. AND T. HEPBURN AND SONS,
ANNERS AND CURRIERS, LEATHER MILLBAND AND HOSE PIPE
MANUFACTURERS,

LONG LANE, SOUTHWARK, LONDON

Prize Medals, 1851, 1855, 1862, for

MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

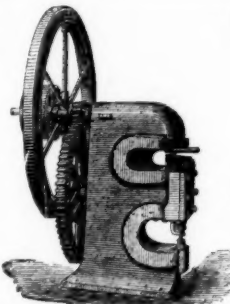
J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),
Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES and
FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,
RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.
STOURBRIDGE FIRE BRICKS AND CLAY.



PUNCHING & SHEARING MACHINES,

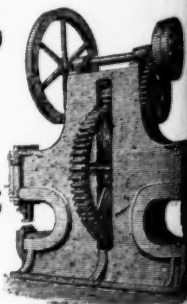
Suitable for Collieries, Shipbuilders, Boiler Makers,
Ironworks, &c.

Self-acting, Slide, and Screw-cutting
Lathes;

Slotting Machines; Shaping Machines;

Drilling, Planing, and Screwing
Machines;

And Miscellaneous Tools of every kind always in Stock.



J. GOODWORTH, KIRKSTALL ROAD, LEEDS.

Teams Patent Hemp and Wire Rope Works

GATESHEAD-ON-TYNE.

DIXON, CORBITT, AND SPENCER.

MANUFACTURERS of every description of ROUND and FLAT ROPES of any length for COLLIERY, RAILWAY, AGRICULTURE,
SHIPPING, and other purposes, and guaranteed of the highest standard of strength.

Best Selected Charcoal Iron, Best Crucible Cast Steel, and extra strong Improved Steel Round and Flat Wire Ropes; Compound laid non-rotating Flexible Ropes
in Iron or Steel for small gear and sinking purposes; Best Selected Charcoal Iron Guide Ropes; Galvanised and Plain Ropes for capstans, crabs, capstans,
bridges, canal towing, &c.; Patent Steel Plough Ropes; Galvanised Signal and Fencing Strands; Copper Rope Lightning Conductors; Steel, Iron, and
Sash Cords; Picture Cords; Russian, Italian, and Manila Hemp Round and Flat Ropes; White and Tarred Hemp and Flax Spun Yarns; Round and Flat
Pulleys and Patent Springs for same; Galvanised Wire Rope for Ships' Standing Rigging; Russian, Italian, Manila, and Coir Cordage; Towlines, Warps,
vice and other Lines for Shipping Purposes; Ships' Rigging fitted by experienced workmen.

D., C., and S. beg to call special attention to the advantages to be derived by adopting their EXTRA STRONG IMPROVED STEEL ROPES, for lifting
loads in deep mines, also in hauling from long distances: a considerable reduction is effected in weight, friction materially reduced, and an extra amount of
got out of the rope—a rope 8 lbs. per fathom being equal in strength to an iron rope 12 lbs. per fathom, or an ordinary steel rope 12 lbs. per fathom.

COAL-CUTTING MACHINERY.

W. and S. FIRTH undertake to CUT, economically, the hardest
CANNEL, ANTHRACITE, SHALE, or ORDINARY COAL, ANY
DEPTH, UP TO FIVE FEET.

Apply.—

16, YORK PLACE, LEEDS.

TO COLLIERY PROPRIETORS.

IMPROVED "REGISTERED" SECTIONS OF SCREEN STEEL



THE DOTTED LINES SHOW THE ORDINARY SECTION, AND THE DARK GROUND THE IMPROVED SECTION.
A saving of at least 20 per cent. is effected by the great reduction in weight of material.—For price and particulars apply to—

JOEL EATON WALKER, STEEL MERCHANT, SHEFFIELD.

NOTICE.—These Sections are Registered.